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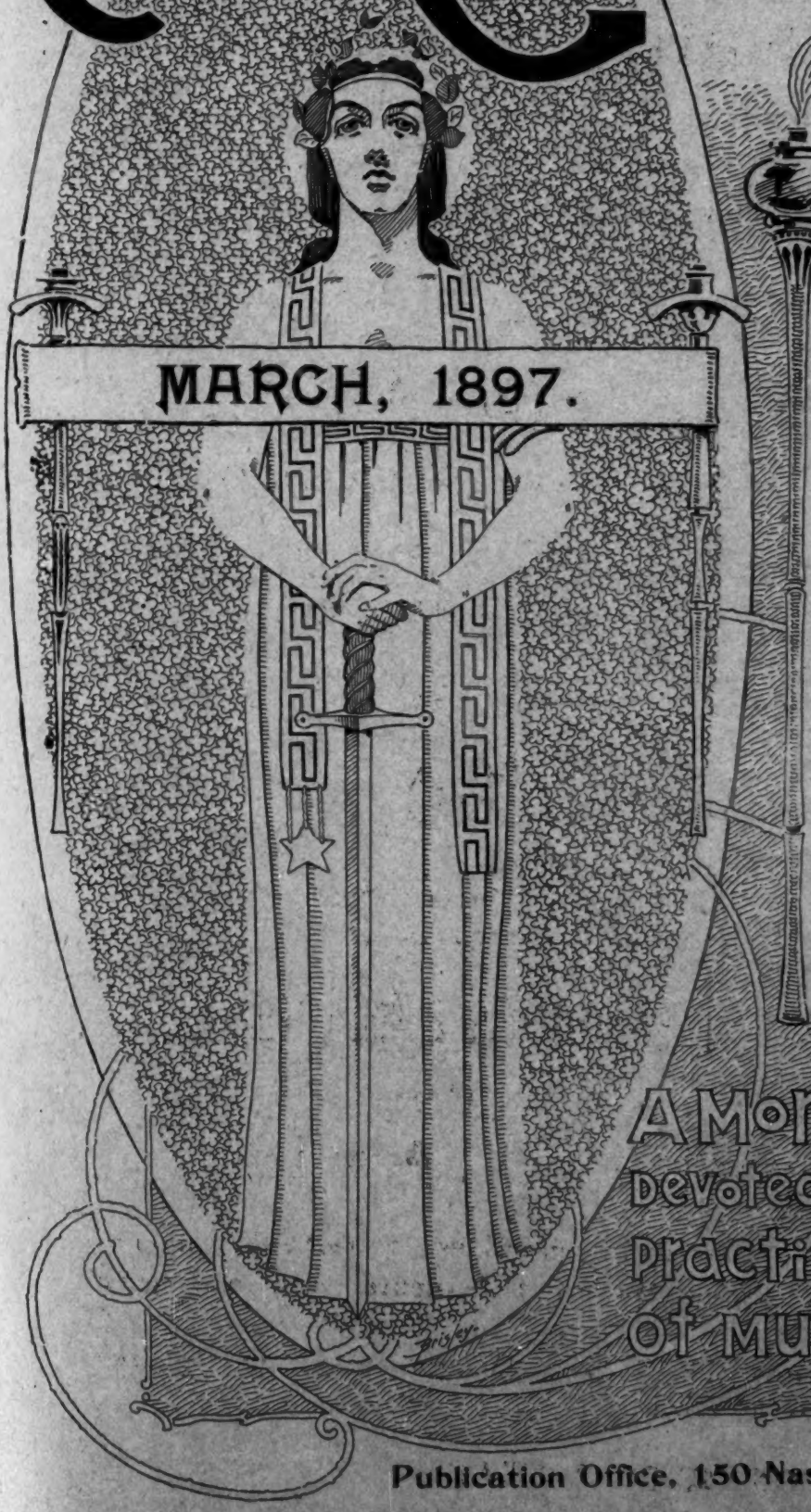
CITY GOVERNMENT



FEATURES

MAYORS ON MUNICIPAL OWNERSHIP.
WORMS METHOD OF FILTRATION.
CIVIC INSTRUCTION IN SCHOOLS.
A MODERN POLICE STATION.
PUBLIC WORKS IN PARIS.
PLAN FOR SIDE STREETS.
HOBOKEN PUBLIC LIBRARY.
WATER METERS TO CHECK WASTE.
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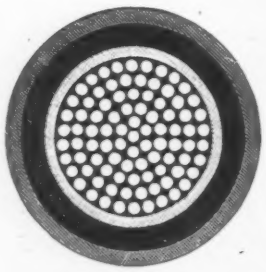

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CITY GOVERNMENT.

(Entered as Second Class Matter at the New York, N. Y., Post Office, August 12, 1896.)

VOL. 2. NO. 3. NEW YORK, MARCH, 1897. $3 A YEAR.

A MODERN POLICE STATION.

One of the handsomest and most completely equipped police stations in the United States was recently completed in the city of Brooklyn, N. Y., and is located at the corner of Gates and Throop avenues, the ninth precinct. The building, as will be seen from the illustration, is an attractive three-story structure with a frontage of 48 feet and a depth of 77 feet. Adjoining the main building is the patrol department with a frontage of 28 feet and a depth of 56 feet. The buildings are faced with the Eastern Hydraulic Company's press brick, and tastefully adorned with terra-cotta trimmings. The entrance is on Gates avenue. To the left of the entrance is the captain's private room, adjoining which is his bedroom with private bath. To the right of the entrance is the sergeant's desk and the sergeant's private room. Also on this floor will be found the quarters of Inspector Brennan, consisting of two neat rooms with private bath; also the detectives' office and bedroom, and a large sitting and reading room for the patrolmen, and a neat room for the matron, adjoining which room and connected with it by a convenient passage are the cells, three in number, for the female prisoners.

The cells building, which is separate from the main building, also contains six cells for men, two of the cells being of double size and provided with comfortable cot beds. A feature of the main floor is its spaciousness, there being ample room for drilling.

The sergeant's desk is equipped with every appliance in the way of signal apparatus, telephone, fire-alarm; and when the patrol service is called, by simply pressing a button on the sergeant's desk, the horses are released and the wagon is underway easily in thirty seconds.

NEW 9th PRECINCT POLICE STATION, GATES AND THROOP AVES., BROOKLYN, N. Y.

The second and third floors contain four large dormitories for the men, one for each section. These dormitories are scrupulously clean and neat, and contain thirteen single white enameled iron bedsteads and every comfort and convenience is provided in the way of toilet accommodations. There are also two separate bedrooms for the sergeants on the second floor, and two on the third floor, and an additional room which is used for a sitting room.

The entire building presents a light and cheerful appearance, and everything has been provided that would add to the comfort of the men who practically make it their home. The trimmings are of ash throughout. The

steam heat is supplied from a large Blake safety generator, and the well-known Okonite wire was used for all the electrical circuits, including the wiring for the electric lights. The cost of building and equipping the entire house, including the cost of the land, was nearly sixty thousand dollars.

Capt. James Dunn.71

The force of the ninth precinct consists of seventy-three men and two matrons, and is under the command of Capt. James Dunn, one of the oldest and most experienced officers in the service. Capt. Dunn joined the Metropolitan police force August 23, 1866, serving four years as patrolman. After the Metropolitan force was disbanded and the Municipal police force of Brooklyn

Main Office, showing Sergeant's Desk.72

organized in June, 1870, he was appointed sergeant of the second precinct, where he remained until July, 1875,

One of the Dormitories.73

when he was appointed commanding sergeant of the ninth sub-precinct, which was made a full precinct in 1885, and at which time he was appointed captain by Col. Partridge, who was at that time commissioner of police. In June, 1895, Captain Dunn was transferred to the twentieth precinct, and in August, 1896, was placed in command of the ninth precinct, and is exceedingly proud of the new house which is certainly a credit to the city. Two other houses are now in process of construction, one being in the twenty-seventh precinct and the other at Coney Island.

PLAN FOR SIDE STREETS.

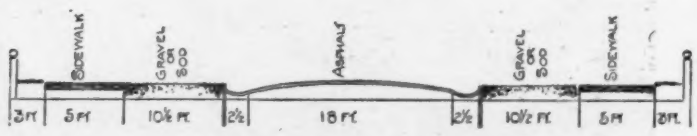
One way to lessen the mud and dust on finely paved main thoroughfares is to improve the neglected "side" streets. A plan has been proposed to make the side streets beautiful at a small expense. Suppose a street could not only be paved, but be made downright beautiful at an expense of $100 to $125 for each fifty foot lot?

Here is the plan:

It has for its basis the usefulness of paving quiet side streets from curb to curb for the morning milk wagons and afternoon grocers' and butchers' carts. Experience the world over has shown that a roadway eighteen feet wide is plenty wide enough for a street or road where the traffic is limited.

Take, for instance, a sixty-foot side street. Pave an eighteen-foot centre roadway with brick or asphalt. On each side of the roadway lay two and one-half feet of gutter, made of rough stones, on edge. There is now eighteen and one-half feet left on each side of the street. Beginning, now, at the building line, three feet of space is left between the fence and a five-foot sidewalk, and then between the sidewalk and the gutter lay ten and one-half feet of gravel or sod, which may be left open or may be set with trees.

The result is doing away with fifty feet of curb for each fifty-foot lot. Doing away with the expensive curbing alone pays 25 to 40 per cent. of this pretty pavement.



Cross Section of Improved Side Street. 74

Now, take the asphalt, for instance, laid on six inches of concrete as permanent as human hands can make it. For fifty feet that would be eighteen multiplied by fifty, equal 900 square feet, divided by nine, make 100 square yards. One hundred square yards at $2.25 a yard is $225. One-half of that would be $112.50 for each fifty foot lot. The gutter can be laid for fifty cents a foot.

Using brick, the cost would be reduced to $75 for each fifty-foot lot.

As to sidewalks, sidewalks must be laid, anyway, even along the present dirt side streets.

AN EXAMPLE IN ECONOMY.

For the year ending March 1, the municipal electric light plant at South Haven, Mich., paid all expenses and left a surplus of $612.

MUNICIPAL OWNERSHIP.

WELL KNOWN MAYORS DISCUSS THIS IMPORTANT QUESTION FROM VARIOUS POINTS OF VIEW.

MAYOR JONES, OF KANSAS CITY.

The question whether it is desirable for American cities to own their own lighting plants, or, for that matter, any other quasi-public monopoly, such as water-works, etc., has called forth two schools of advocates diametrically opposed. One school, acting under the principle the less the expansive grasp of the government the better the condition of the governed, maintains in a general way that municipal ownership of these public plants paves the way to additional room for political corruption, without materially bettering the masses; while the other school, relying upon the intelligence of voters to overthrow attempted corruption, maintains not only that municipal ownership saves the profits of the private monopoly to the citizens, but tends to add healthful commercial vigor, business solidity and municipal pride in its wake.

MAYOR JONES.

I must confess (the proper conditions prevailing) I am in principle a strong believer in municipal ownership of these quasi-public monopolies. Just how far such proprietorship should extend over the various forms of public conveniences might be debatable, but as to the primary public necessities of water and light, I strongly advocate municipal ownership.

I regard municipal government as *business*, not politics, and the municipality that appropriates to itself the shrewd business principles governing large private corporations will certainly accelerate the advantages of its citizens in the one case the same as the stockholders in the other, for the interests of the citizen and the stockholder are relatively identical in the two instances named.

It is a well-known fact that the profits arising from a lighting monopoly in our large cities are enormous when based upon the actual cost and operating expenses of the plant (not upon its watered stock), which can all be saved to the public by municipal ownership. I will not attempt to detail the magnitude of these profits, as they vary in different localities. In addition to the saving of profits to the public, which to that extent decreases the ratio of taxation, municipal ownership of these plants creates favorable impression upon foreign investors, thus indirectly stimulating the life and activity of a city in the various beneficent channels of business and commercial growth, thereby tending more or less to increase the property subject to taxation; and besides this, a no slight thought, is the consideration of accelerated municipal pride and interest manifested on the part of the inhabitants, likely to produce a healthful public tone and favorable disposition along other lines of public improvement.

While the foregoing are only a few of the beneficent results which I regard as growing from municipal ownership, still the step should not be undertaken until after careful judgment has declared that the municipality can safely and prudently handle the financial undertaking. It must be remembered a large, burdensome taxation retards a city's growth, and should this be the result of the investment it would be much preferable to permit private capital to furnish light under carefully prepared franchises. These franchises should be so drawn that at stated intervals of time, or at the expiration of the franchise, the city should have the privilege of purchasing the plant at its actual duplicated value, less wear and tear, carefully avoiding stock valuations and providing for arbitrators to conclusively adjust this valuation. Then when the financial prosperity of the city permits, long running bonds could be negotiated at low interest, the purchase effected, the profits made devoted to a sinking fund to meet the interest and finally the bonds, all without additional cost to the inhabitants, either in the shape of taxation or increased prices charged consumers. After one generation the plant could be paid for, and the price charged consumers reduced to the actual cost of production, if desired, or the profits devoted to the revenue of the city and the ratio of taxation lowered accordingly.

In a number of our eastern cities municipal ownership of these plants has proven its desirability, lowering the prices to consumers as well as creating a revenue for the city; and the late trend of general public sentiment is rapidly developing into a pronounced declaration in favor of municipal control of these plants. Our country is new, a majority of our cities still in comparative infancy, but I firmly believe that the wisdom arising from the onward march of time and progress will evolve municipal ownership of all quasi-public monopolies, after the pattern of Glasgow, Birmingham and other excellent models furnished by continental Europe.

MAYOR WOOD, OF SEATTLE.

W. D. Wood, mayor of the far western city of Seattle, Wash., writes: "I am heartily in favor of the municipal ownership and management of lighting plants in all cases where financial and other conditions justify the undertaking. Our city has had several years of most satisfactory experience with a municipal water plant. We have been investigating the light question for a long time, and will arrange for a municipal plant in connection with the addition of a gravity supply for our water system. At a re-

MAYOR WOOD.

cent charter election our people adopted an article authorizing the construction or purchase and operation of street railways by the municipality, after a submission of each proposition to a vote of the people. Municipal ownership of public utilities is the coming reform. By the application of business principles in municipal management, through civil service, municipal ownership will be not only practicable, but will give better service, lighter charges and purer politics."

MAYOR TODD, OF LOUISVILLE.

From George D. Todd, mayor of Louisville, Ky.: "In my opinion, every city with a population of 50,000 or upwards would find it more economical, and more satisfactory in other ways, to own and operate its own lighting plant. It is true that I have not made an exhaustive investigation of the subject, and it is equally true that I have never resided in a city where the lighting was done under the direction of the city government; still I have advanced sufficiently far in my investigation to warrant the belief that a lighting plant owned or controlled by a municipality, where removed from political influences, is a paying investment. Only a few months since I wrote to the mayors of about twenty cities near the size of Louisville, requesting to be advised how many electric lights are in use, how many hours the lamps are burned each night, cost of each lamp per annum, and whether the light is furnished by private corporations or by plants owned by the cities. I was much surprised to find such a disparity in prices existing in the various places. Only two of the cities heard from owned their own plants. One of these having only been erected within the past year, it is impossible to estimate the cost per lamp, but the expense of lighting in the other city is much below the contract price enjoyed by the cities who rely upon outside corporations for light. The city referred to has clearly demonstrated by a practical test that it is much cheaper to make their own light.

MAYOR TODD. 77

"Aside from this example, it is but natural to conclude that if a private corporation can furnish light to a municipality using upwards of 500 lights and pay a handsome dividend out of the receipts derived from this source, the city that pays the bill might reasonably expect to save an amount equal to the sum of the dividends paid, through the application of business principles in the conduct of their own plant. So far as my observation goes, the private corporations who furnish light to the various cities of the country are in a prosperous condition. A goodly portion of their profits is derived from the municipalities whom they serve. A city government has an equal chance with private corporations to secure skilled labor at reasonable prices, and can purchase the necessary materials and supplies as cheap as any other combine within its corporate limits. The profits to a city may not be equivalent to the amount of dividends earned by companies who are regularly engaged in the business, because those companies, as a rule, furnish not only the municipality with light, but also the stores, public halls and other establishments, thus adding to their revenues through the transaction of a greater volume of business. It is, of course, patent to all, that volume cheapens the cost of production, thereby affording greater returns on the capital invested. I do not believe a city government should undertake to furnish light to any firm, corporation or individual, but should confine itself strictly to the making of public lights. To my mind, there is ample profit in the production of a quantity sufficient to light its thoroughfares, without encroaching upon the rights of, or choking off local enterprises organized for the purpose of supplying light to the community. While I consider it to be the plain duty of a municipality to foster and encourage every enterprise designed for the comfort and advancement of its people, at the same time I know of no valid reason why a city, by way of encouragement, should pay an electric light or gas company a premium to furnish lights while the same service could be performed at first cost to the city and by the city. Where the population exceeds 50,000 inhabitants there should be enough business to warrant the investment of private capital in a plant of this character, without depending upon business of the municipality for support."

MAYOR McGUINNESS, OF PROVIDENCE.

Edwin D. McGuinness, mayor of Providence, R. I., thinks the city should operate its own plant or receive adequate revenue from corporations enjoying the use of public streets. He writes: "The cost of electric lighting to this city, amounting as it did, in the last fiscal year to $220,433.72, brings up the question of municipal ownership of street lighting plants. There is no doubt that this city could build and maintain a plant to furnish all its electric lights for streets, at a safe and conservative estimate, for $75.00 per light, per year. This city is now paying at the rate of $127.75 per light, per year, or an unnecessary cost to the taxpayer, for 1,800 lamps, of $94,950.00 per year. These figures are calculated to make citizens ponder and consider why we should pay this excessively large sum when, by owning our own plant, such a great saving could be made. The saving of this amount would have made unnecessary the increase of the Providence tax rate from $1.60 to $1.65 the present fiscal year.

MAYOR McGUINNESS. 78

"An important source of revenue from which a city ought to obtain the greater part of its necessarily large revenues is the income from franchises for the use of public streets. If municipal ownership of street railways,

gas and electric lighting plants, in the same manner as we own and manage our water supply, be deemed inadvisable, the city, at least, ought to have a large share of the profits arising from the use of streets which belong to the people and for which, in many cases, the people have paid large sums of money to construct, enlarge and maintain. This source of revenue is indirect and therefore is not felt by the people, as is the case of a direct increase of fifty cents or one dollar in the tax rate."

MAYOR SALTSMAN, OF ERIE.

Robert J. Saltsman, mayor of the enterprising city of Erie, Pa., is an enthusiastic supporter of municipal ownership of lighting plants. In a letter of recent date, he says: "I am heartily in favor of the city of Erie owning and operating its own electric lighting plant. From the best information I can secure from electricians and engineers I am led to the belief that we can supply our city with 2,000-candle power lamps for from twelve to fifteen cents per night, per each light. We are now paying thirty cents per light per night, and municipal ownership would therefore mean a saving of about $25,000 a year."

MAYOR SALTSMAN. 77

MAYOR GREEN, OF BINGHAMTON.

George E. Green, mayor of Binghamton, N. Y., devoted much attention to the subject of electric street lighting in a recent message to the council. From advance proof-sheets of this message, kindly furnished us by Mayor Green, we quote as follows: "This city is now provided with lights at a fair price, and for a period which will enable thorough investigation to be pursued regarding the advisability of owning and operating a municipal electric lighting plant. My experience has demonstrated that it is almost impossible to secure thoroughly reliable data from cities owning municipal plants. So much of uncertainty concerning actual and contingent expenses maintains that it is difficult to restore order from the general chaos. Your honorable body should carefully investigate and keep in touch with the changes, and the moment tangible facts prove that it is sufficiently cheaper for the city to own its lighting plant instead of contracting for its lights, then it becomes your duty, as well as mine, to undertake the preliminary work of establishing a municipal plant, in which case we should first determine if some amicable and favorable plan could be adopted to purchase the plant from the private corporation now located here. The logic of the situation does not demand the killing off of vested interests and the ruination of a private enterprise if such an unhappy result can be avoided with full justice to the city and its manifold interests, any more than it follows that the city should submit to any extortionate demands from said private corporation."

MAYOR GREEN. 80

WATER METERS TO CHECK WASTE.

BY M. A. GEMUENDER, DIRECTOR OF PUBLIC IMPROVEMENTS, COLUMBUS, O.

The system of water rates now in use in Columbus rests upon no scientific basis whatever. All the various classes of consumers use water from the common pool, but no effort has been made to distribute the cost of operation equitably among them. The whole system of charging consists merely in assessing the private consumer about all that it is thought he will stand and placing the balance against the city. In addition, the State law, while creating a large free list, makes no provision as to who shall support it, leaving in fact this additional burden to be borne by the private consumer.

As a preliminary step towards establishing just rates, the meter system should be adopted throughout the city, that is to say, the city should own the meters, consider them a part of the plant, and furnish them to all consumers without charge. Unless a system of measurement is adopted, it is impossible to ascertain what is the extent of waste in mains and services or to obtain reliable data upon which to base a rational schedule of rates. But for the fact that at the time that water-works plants were first established there were in existence no trustworthy water meters, it is safe to say that the prevailing system of estimating bills with all its inherent absurdities, arbitrary provisions and inequalities would never have been thought of. The law which creates and foists upon a city a specific free list should above all things be repealed and each municipality permitted to decide for itself what local charities it will support as well as all other matters which are merely its own concern.

Aside from the question of adjusting rates the meter system is of great value in other ways. The item of waste water is one of the utmost importance and one which should be carefully taken under consideration in the planning of any water system. Experts and engineers throughout the civilized world are almost unanimous in the opinion that many of the extremely expensive extensions of the water plants recently undertaken by large cities would not have been necessary had proper checks been applied against waste. The notion that water should be "free as air" is based on a misunderstanding of conditions. Any person desiring to do so can without opposition or expense dip from the river such water as he may need, and to this extent, and to this extent only, water may be said to be "free as air." What in actual fact, however, he pays for when he uses water from the water-works is having his water delivered on his premises.

This process of delivery is an expensive one and the cost must be borne by some one. It therefore follows that water wasted by consumers invariably means a dead loss to the community. The item of waste water is a far larger one than most people have any appreciation of, as the following examples will show. The amount of water pumped during the wet year of 1896, in the city of Columbus, averaged 95 gallons per capita, per diem. In the city of Liverpool, England, by the application of meters and a systematic inspection for the prevention of waste the per capita consumption is but a trifle more than 27 gallons per day. Says Mr. Parry, the engineer in charge: "Public baths and wash-houses are provided to a larger extent than in any city in the country. Public drinking fountains are numerous, and the water is freely used in flushing sewers and in drainage and in street sprinkling." In another English city containing a population of about 87,000, a similar experiment was tried. In this city (Shoreditch) in 1882, after deducting what was used for trade and municipal purposes, the daily per capita supply was 36 and 8-10 gallons. Under the meter and inspection system it fell off in 1883 to 27 and 2-10 gallons, in 1884 to 16 5-10 gallons, in 1885 to 14 and 1-10 gallons, which is to say that in three years' time the daily waste and consumption was reduced 60 per cent. Engineers cite also the cases of Oxford and Cambridge, cities of about 40,000 inhabitants each, for the purpose of showing how communities may pass from a threatened famine to abundance. "In the former city, where no efficient regulations are used, the quantity delivered is 80 gallons per head; in the latter, where efficient regulations are in use, the quantity delivered is 18 gallons."

In our city of Columbus the quantity of water pumped during the year of 1895 averaged 109 gallons per capita per diem. And during the very dry summer of this same year we were yet able to deliver and did deliver 115 gallons. It would certainly seem that if 27 gallons per capita is sufficient for a city as large as that of Liverpool, England, we have been wasting water at an enormous rate for many years. If we could adopt a meter system and other checks against waste, I believe that the city would have to go to no great expense to provide all the water it would need.

STREET REPAIRING METHODS.

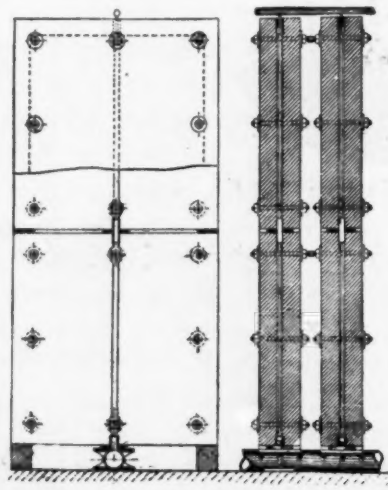
Chief Hicks, of the Philadelphia bureau of highways, is not satisfied with the method of repairing and maintaining streets prevailing in that city. "The present method of repairing and maintaining the streets of our city," he says, "is very unsatisfactory, and, I think, unbusinesslike. Instead of having the responsibility for repairing and repaving resting upon railroad, railway, telegraph, telephone, conduit and other companies, corporations, firms and individuals, and also upon the several contractors of the city, thereby resulting in a divided responsibility, so that the citizens cannot tell who really is to blame for existing conditions, the system should be so changed that no matter for what purpose streets are opened, the repairs should be made directly by the bureau of highways, under its regular contracts, and that the cost be charged to the companies for whom the streets are opened at a fixed rate per square yard."

WORMS METHOD OF FILTRATION.

[Report by Mr. Frank H. Mason, United States Consul-General at Frankfort, Germany.]

There is now in operation at the city of Worms, as well as at Kiel, Winterthur, Frankenhausen, Landsberg (near Berlin), and several other places in Germany an improved system of filtration for water, which should have an important interest for the numerous municipalities in the United States that are struggling with the problem of purifying river water on a large scale for household and manufacturing purposes.

Hitherto, the method most generally employed has been that of filtering through sand or gravel, and, for this purpose, a layer 30 to 40 inches thick of clean sand, mixed in some cases with charcoal, has been used. The sand, being loose and non-adhesive, lies, of course, at the bottom of the tank, and in this form entails two important economic disadvantages—first, the area of space required is large in proportion to the amount of water to be treated, and, second, all sediment in the water settles upon the sand which forms the bottom of the filter, and which soon



becomes gorged and clogged so that the filter must be thrown out of use while it can be cleaned by mechanical means.

The new system, which the present report will briefly describe, is the invention of Director Fischer, for many years past water-works engineer of the city of Worms, where the use of Rhine water for general purposes presented the same problem that confronts cities like Cincinnati, St. Louis, Cairo and others which derive their water supply from the often-turbid rivers of the Mississippi Valley. The germ, or fundamental idea, upon which the new system is based is the fact that clean, sharp sand, when mixed in due proportion with finely pulverized glass, which may be derived from the waste of glass works, old bottles, etc., forms a porous mass, which, by baking under a high temperature, may be hardened in any desired form. The inventor in this case hit upon the plan of moulding this porous cement into hollow plates or plaques about forty inches square and eight inches thick, that is, with walls three inches in thickness and about two inches of hollow space at the centre of the plaque.

In constructing the filtering plant, these plates are set upright in groups or batteries of any number, according

to the desired size and capacity of the establishment, and are ranged along the lower portion of one or more tanks of hydraulic masonry, where they can be covered to a depth of three or four feet with the water to be filtered. The water is then forced by its own pressure through the porous walls of the plate into the interior hollow space, where it trickles down and is drawn off through pipes, laid at the bottom of the tank, to the reservoir which receives the filtered water. These discharge pipes are rigged with cocks so that each plate and group of plates may be isolated for cleaning or other purposes while the adjacent batteries are in operation. For greater economy of space and tubing, two tiers of plates are set, one above another, as shown in the accompanying drawing, which gives a front and edge view of two pairs of plates, set in the usual manner, whereby both tiers are served by one set of discharge pipes. The water, in passing through the three-inch walls of vitrified sand, is filtered as perfectly as by traversing three feet of loose sand or gravel in the ordinary sand-filtering process. The plates, being set upright and close to each other, increase from eight to ten fold the filtering surface that may be condensed within any given superficial area, thus securing an important economy of space within frost-proof constructions, and where, as is often the case, land is costly and difficult to obtain.

Nor is this the only, or even the principal, advantage of the new system. Every practical water-works engineer knows the delays, labor and expense involved by turning sand filters out of circuit and cleansing them of the mud and detritus which collect so rapidly at the bottom of the tank. With the plaque filter, the cleansing operation is easily and quickly performed by simply reversing the current of water, that is, turning it backward through the discharge pipes into the hollow plates, whence it percolates outward through the porous walls into the tank, dislodging readily the dirt that has collected on the outer surface. This falls to the bottom of the tank in which the plates are submerged, and is drawn off in liquid form, assisted, when the accumulation is large, by means of a hoe or shovel, and followed, when the tank has become emptied, by flushing with a jet of water from a hose, which cleans thoroughly the surface of the plates and washes out the bottom of the tank itself. The discharge cocks are then closed and reversed, water turned again into the tank, and the process of filtration resumed.

The depth or "head" of water necessary to make the filtration sufficiently rapid is from three to four feet, and the reversed head, for cleaning the plates by turning the water backward through the discharge pipes, should be about six feet to give sufficient pressure for the best results. Thus constructed, the filtering plant at Worms, which may be taken as the original type and model of the system, has been in constant operation during the past four years, without accident or appreciable deterioration. From all testimony that can be obtained, the results at Worms, both as regards economy of construction and maintenance and speed and thoroughness of filtration effected, have been eminently satisfactory.

The tanks, as already indicated, are made of masonry laid in hydraulic cement, and if galvanized tubing is used, to obviate rusting, the life of such a plant may be indefinitely prolonged. The demonstrated success of the original filtering plant has led to the organized manufacture of the plates by the firm, Bittel & Co., who have large works at Worms-on-Rhine, and furnish not only the prepared materials, but estimates and plans for filtering outfits for municipalities and manufacturing establishments, such as breweries and chemical and other works in which a large supply of limpid water is an essential requisite. Smaller installations are also furnished to works in which river water or spring water, strongly charged with oxides of iron, is used for generating steam.

According to an official report by M. Janssen, of the University of Brussels, who made an exhaustive study of the whole subject at Worms, that city began in 1889 the filtration of Rhine water for general purposes by the ordinary sand-filtering process, similar to that then used at Berlin. With a filtering surface of 1,300 square meters (approximately 13,000 square feet), 3,000 cubic meters (792,510 gallons) of water were filtered in twenty-four hours. This supply proved insufficient for the city, and it became necessary to construct an addition to the filtering plant, the cost of which, on the sand-filter plan, was estimated at $30,000. It was then that the Fischer system was given a practical trial.

Instead of occupying new land and building additional constructions, one of the ten vaults containing the sand filters already in use was isolated, cleaned out, and the space filled with a battery of five hundred plates of the Fischer pattern. The whole cost of the change thus made was about $9,600, and the new filters, occupying one-ninth as much space as the sand filters, doubled the filtering capacity of the entire installation. In other words, five hundred Fischer plates, costing, set up and ready for operation, $9,600, and occupying only 130 square meters of space, filtered as much water as the sand filters which occupy 1,170 square meters of space and cost $30,000. To substitute the Fischer plates for sand throughout the entire establishment would be to increase the filtering surface from 1,300 to 10,000 square meters (approximately from 13,000 to 100,000 square feet) and multiply by ten the daily filtering capacity of the plant.

From a long series of analyses and careful observations made by the sanitary authorities at Worms, it appears that the efficiency of the two systems of filtering, which are there worked side by side, are practically identical, so far as regards their effect upon the chemical purity of the water, but the percentage of bacteria left by the Fischer process is somewhat greater than is left by the sand filter when clean and in good working condition. This, however, is not considered a defect of practical importance. The water delivered by the new filters at Worms, as well as at the other places where they are in daily use, is certified by high and impartial authority to be thoroughly purified and fitted for drinking, as well as for culinary and manufacturing purposes.

—The Fisk Free and Public Library, of New Orleans, was formally opened January 18. William Beer is librarian.

THE YOUNGEST MAYOR.

John P. Feeney, recently elected mayor of Woburn, Mass., is probably the youngest man in the United States holding such an office. He is only 24 years of age, having been born in Woburn, November 21, 1872.

He attended the public schools and then entered a leather factory to learn the trade of finishing leather. He followed the business for five years, part of which service was in Stoneham. While working days he attended the public evening school of Woburn, and became an expert shorthand writer. He then turned his attention to stenography, and was engaged in many court cases.

JOHN P. FEENEY, MAYOR OF WOBURN. 82

About this time Mr. Feeney entered the law office of Francis P. Curran, at the same time doing newspaper work and studying law. He graduated from the Boston University law school, and in 1893, when but two weeks past his majority, was admitted to the bar. He now has a lucrative practice in Woburn, where he is associated with Philip J. Doherty.

Despite his youth, Mr. Feeney has had a large experience in business matters. He is as smart as a whip, keen of observation, a man of his word, and will, no doubt, conduct the affairs of the city as carefully as an older head.

TO LIMIT TELEPHONE RATES.

A bill has been introduced in the New York legislature for the reduction of telephone tolls. Cities of one million inhabitants and over shall not pay a rate to exceed $125 per annum; in cities of five hundred thousand inhabitants, and less than one million, a rate not to exceed $85 per annum; in cities of one hundred thousand inhabitants and less than five hundred thousand, not to exceed a rate of $48 per annum; in cities of twenty thousand inhabitants and less than one hundred thousand inhabitants, not to exceed a rate of $36 per annum; in cities and places of eight thousand inhabitants and less than twenty thousand, not to exceed a rate of $30 per annum; and in all cities and places of less than eight thousand inhabitants, not to exceed a rate of $27 per annum.

CIVIC INSTRUCTION IN SCHOOLS.

(Paper by Wm. A. Giles, read before the Civic Federation, Chicago.)

In a country which is self-governing, where each individual participates freely, by his vote, in all public affairs, in the vast concern of city, state, and nation, it is not only desirable but absolutely necessary that the child should have the best possible training to prepare him for an intelligent discharge of his duties and obligations to his fellow-men and to his country. Under a monarchical government this may be neglected, but civic education is an indispensable prerequisite and corollary to universal suffrage.

We have ample provision for making business men, doctors, lawyers, or artists, but very little attention has been given to making the citizen. How can we expect an intelligent exercise of civic rights and the discharge of civic obligations by men who have no conception of what their rights and obligations are? How can we hope that men will respect the constitution when they do not know what the constitution is? that they should respect the right of franchise when they do not know the meaning and power of the ballot? or that men will respect and cherish our country, its laws and institutions, of which they have only a most vague idea?

Pestalozzi, the eminent Swiss educator, said: "Without civic, moral, and political education a nation is like a child playing with fire, who runs the risk of burning down the house at any moment." I would emphasize the facts that 94 per cent. of our children leave the public schools at 13; that a large per cent. of our children are of foreign extraction.

To further illustrate my idea I wish to call your attention briefly to the system and method of moral, civic, and political instruction in France. I have a dozen textbooks such as are used in the schools of Paris, among them "Elementary Instruction—Morals and Civic," by Compayre; "Moral and Civic Instruction—The Man and the Citizen," by Jules Steeg; "Our Obligations and Our Rights;" "Ideas Pertaining to Civic Rights;" "The French Government—De la Marche;" "Lessons in Morals and Patriotism," by Mezieres; "The Little Frenchman" (as we would say the young American), by Bigot, and, accompanying this, a small illustrated volume of selections to be read to the children. I would call special attention to this on account of the high ideals of the selections, especially calculated to interest the child and to inspire a devotion to his country, its great men, and their deeds. I was especially interested in the quotations from the precepts of Benjamin Franklin's "Poor Richard." Also from Thomas Jefferson, Washington, and in an account of Abraham Lincoln, laying emphasis upon his filial devotion, his patriotism, and his emancipation of the slaves. These selections are remarkable for their high literary quality and for the judgment shown in their selection from the best authors of France, Italy, Germany, England and America, and for their especial adaptation to the comprehension of the child. Here are also books for the higher and normal schools upon French history, administration of law in France, political economy, etc.

I present herewith the official programme prepared by

the Minister of Education and adopted by the National Chamber of Deputies for the schools of France. The state maintains the right to examine the pupils from private schools and institutions in these lines to make sure these subjects are not neglected:

The primary course is divided into lessons for pupils of different ages—5 to 7; then 7 to 9. The first are very simple, being familiar conservations, short stories, and songs, followed by a few questions designed to impress the child with what he has learned. The teachers very ingeniously implant in the mind of the child a sentiment of love and respect for parents, obedience, duty, and later, ideas of honesty, justice, dignity, sobriety, and obligations to associates in the different relations of life and respect for law and devotion to one's country.

Secondary Course—Nine to 11 years; general ideas concerning the organization of France. The citizen, his duties and his rights. The obligations laid upon the scholar. Military service. Taxes. Universal suffrage. The commune, the mayor, the municipal council. The department, the prefect, the general council. History of France. The state, the legislative power, the executive power. Justice.

Higher Course—Eleven to 13 years: History. More thorough ideas of the political, administrative, and judicial organization of France. The constitution. The President of the republic. The Senate. The Chamber of Deputies. The law. The central department and communal administration. The different authorities, civil and penal justice. Instruction, its various departments. Police administration. Elementary ideas of practical law. The civil state. The protection of minors and property. Conversations, introducing elementary ideas of political economy. Man and his needs. Society and its advantages. Capital, labor, and association. Production.

The French idea is not only to make each child an industrious, intelligent and devoted citizen, but to make him a stalwart Frenchman, ready to sacrifice his personal interests and his life, if need be, for France. I would have you note the character of the men who have engaged in this work and prepared these little books. Eminent members of the French Academy, Deputies, Ministers of state, and professors have not thought this subject beneath their attention.

To show you something of their spirit I will read from the introduction to the book for little children, by Charles Bigot, professor of literature in the University of St. Cyr. The preface is in the form of a letter in three parts to the child, the last being addressed to boys 12 or 14 who have had some preparatory instruction.

"Little French boy, my young friend, my younger brother, listen to me. I am going to talk to you about the greatest, the most sacred thing in the world—your country. Wherever you may live, whether in Paris, or in some smaller place, we are both Frenchmen, sons of the same land, and that is almost the same as a blood relation between us."

* * * * * * *

"Listen; I am going to try to explain to you what one's country is, and what your country, France, is. And when you understand why you ought to love her with all your heart, and why she deserves that you should love her and be ready to die for her, if necessary, then we will talk about how you can serve her. Life, my child, gives nothfor nothing. Everything must be paid for. Why have you a good and holy law within? Why can you go and live in any part of the world in safety if you wish? It is because your fathers were good Frenchmen, because they did not give grudgingly their money or their blood; because they did their duty. Do yours in your turn. And now I come back, my dear child, to this country, the most noble, the most beautiful, but learn well what 'noble country' means and what sacrifices it demands.

"If you do not wish to make these sacrifices, leave your native soil; say good-by to your family, to your fellow-citizens; disown your father and mother; go and live elsewhere.

"Then I have nothing more to say to you. If you are one of that kind of people, I tell you frankly, France will not be much impoverished in losing you. But if you have the least pride in this name of French which you received when you were born, guard it well. This glorious name is not only an honor, but a challenge as well."

* * * * * * *

"No, France cannot be unfaithful to her past. She must either perish or take her place again at the advance guard of civilization. At the head of the group of nations. That is the only position which can be hers.

"One of the moralists of our time has given us a beautiful thought: 'Man is not born to be happy; he is born to be a man, with all the risks and dangers which that implies.' That means, my friend, that the man really worthy the name of a man is not born to find his happiness where most people find theirs; but he is born to find it in action, to do virile deeds, to deserve always his own self-respect and that of others.

"Have hope and confidence; you belong to a race of brave men; be willing to wait; be patient, prudent, resolute. Your hour will come, believe me. You are fighting for the cause of justice. There is your strength. When the day of battle comes, think of your fathers, think of your children, think of her who binds them together, of France, your country."

You observe that he begins and ends with his country, France.

My contention is that while we have some text-books in the United States we have not a well-graded series adapted to the instruction of our children in the primary, intermediate schools, and for use by mothers in the home, and that such as we have are rather formal and dry, do not enter deeply enough into the moral, social, and patriotic aspects of the question.

The word moral, as used in French, has a much broader significance than it has with us. It covers the whole conduct of life in every relation—personal, domestic, social and political.

In my opinion this work has done more than any other agency to revolutionize the conditions in Paris since the days of the socialistic uprising twenty-five years ago. I was in Paris in 1871. It has been my privilege to visit the city at intervals of three or four years since and the

change for the better has been plainly noticeable. No more worthy work than this can engage the attention of teachers and leaders in social thought. Many of our good citizens and teachers who understand clearly the embryology of spiders, the chronology of the glacial period and the chemical affinities, have given but scant thought to the problems of the city and state.

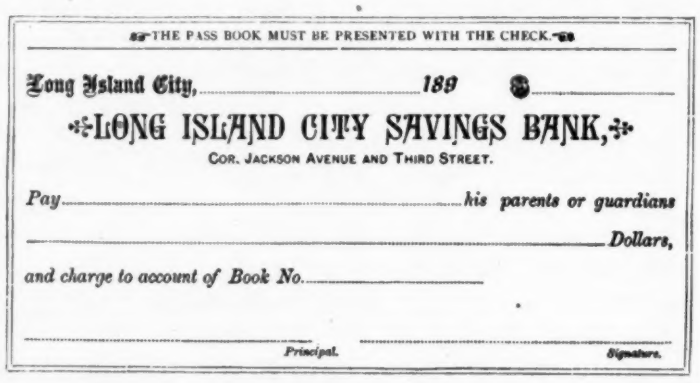
I suggest the appointment of a committee to be made up of men experienced in educational matters and whose minds are imbued with the importance of the work, and that the committee, if after due investigation and consideration they shall deem it advisable, shall proceed to prepare or cause to be prepared a set of text-books somewhat along the lines of those I have here presented. No doubt that such books if skilfully and judiciously prepared and indorsed by this committee, the chairman of this committee personally, by other educators and by the press would find publishers, and that under the right influences could be introduced into the public schools of this city and perhaps in other cities of this and other states.

It seems to me that the right kind of books, too, could be placed in the hands of parents. I would therefore suggest the consideration of some plan for the organization of private classes outside of the public schools for the study of questions relating to our institutions, with some system of examinations at stated periods and the giving of prizes for proficiency in the study of some of the questions above outlined.

SCHOOL SAVINGS BANKS.

Although school savings banks were introduced in the United States twelve years ago, there are a great many school officials and thousands of citizens who are not familiar with the system and its advantages. As the object of the public school is to train children to citizenship, the practical lessons of thrift and economy, as taught through the operation of savings banks in conjunction with the regular school work, will help considerably to reach that end and vastly increase the earning power and intelligence of all, imparting a sound economic and civic instruction to the individual. Thousands of young people are graduated yearly from our institutions of learning with minds well stored with theoretical knowledge, a large portion of whom make an absolute failure in their life work because they have not been well grounded in thrift, economy and self-dependence. The children of this nation are generally permitted to acquire habits of extravagance and waste which cling to them in later years and, in many instances, bring adversity and misery. School savings banks are designed, primarily, to cultivate thrift and economy among the children, and thus insure them against the evil consequences of extravagance and waste. Incidentally, they accomplish another end—that of providing our school children with foundations upon which to build their fortunes. The purpose of this article is not so much to point out the merits of the school savings bank system as to describe its practical working.

Deposits are received, in amounts from one cent to one dollar, from the pupils by their teachers every Monday morning during the school term. As the teacher calls the roll each pupil states whether or not he or she desires to make a deposit, and if so, the amount is named and handed to the teacher, who credits it to the pupil on the regular attendance roll for that day. The pupil is also provided with a card upon which the amount of his or her deposit is entered every week. After roll call the teacher foots up the amounts entered upon her book to see that it tallies with the total sum of money received by her; she then places all the money in an envelope, bearing the name of the teacher, the class, and the amount, and hands it to the principal of the school. The principal, who receives the money from all the classes in this manner, sends


THE PASS BOOK MUST BE PRESENTED WITH THE CHECK.

Long Island City, ... 189 .....

LONG ISLAND CITY SAVINGS BANK,

COR. JACKSON AVENUE AND THIRD STREET.

Pay ..... *his parents or guardians*

..... *Dollars,*

and charge to account of Book No. .....

Principal. *Signature.*

SCHOOL SAVINGS BANK CHECK. § 3

it to the savings bank, where it is temporarily credited to the school. Once a month each teacher makes out a statement showing the total amount each of her pupils has deposited during the four weeks, and these statements are sent to the bank through the principal. The bank then passes the amount that has been deposited during the month to the credit of the individual depositors and bank books are issued to all pupils having $1 or more to their credit. Individual depositors may withdraw money at any time by checks signed by themselves, their parents or guardians and the principal.

School savings banks were introduced in this country by J. H. Thiry, formerly a school commissioner of Long Island City, N. Y., in 1885. The children of the public schools of Long Island City were the first to enjoy the benefits of school banking, and they now have an aggregate sum of over $20,000 to their credit in the Long Island City Savings Bank. Since 1885 the total deposits of Long Island City pupils have amounted to over $60,000, but about $40,000 has been withdrawn.

In recent years Mr. Thiry has devoted much of his time to the promotion of the school bank system, and, as a result of his efforts, schools banks are now in successful operation in about 350 schools in about 90 towns and cities. The last published statement by Mr. Thiry shows that there was deposited in the school banks of this country since their establishment the aggregate sum of $402,020; the withdrawals amounted to $244,856, and the balance due depositors was $157,164. The total number of individual depositors was 30,921.

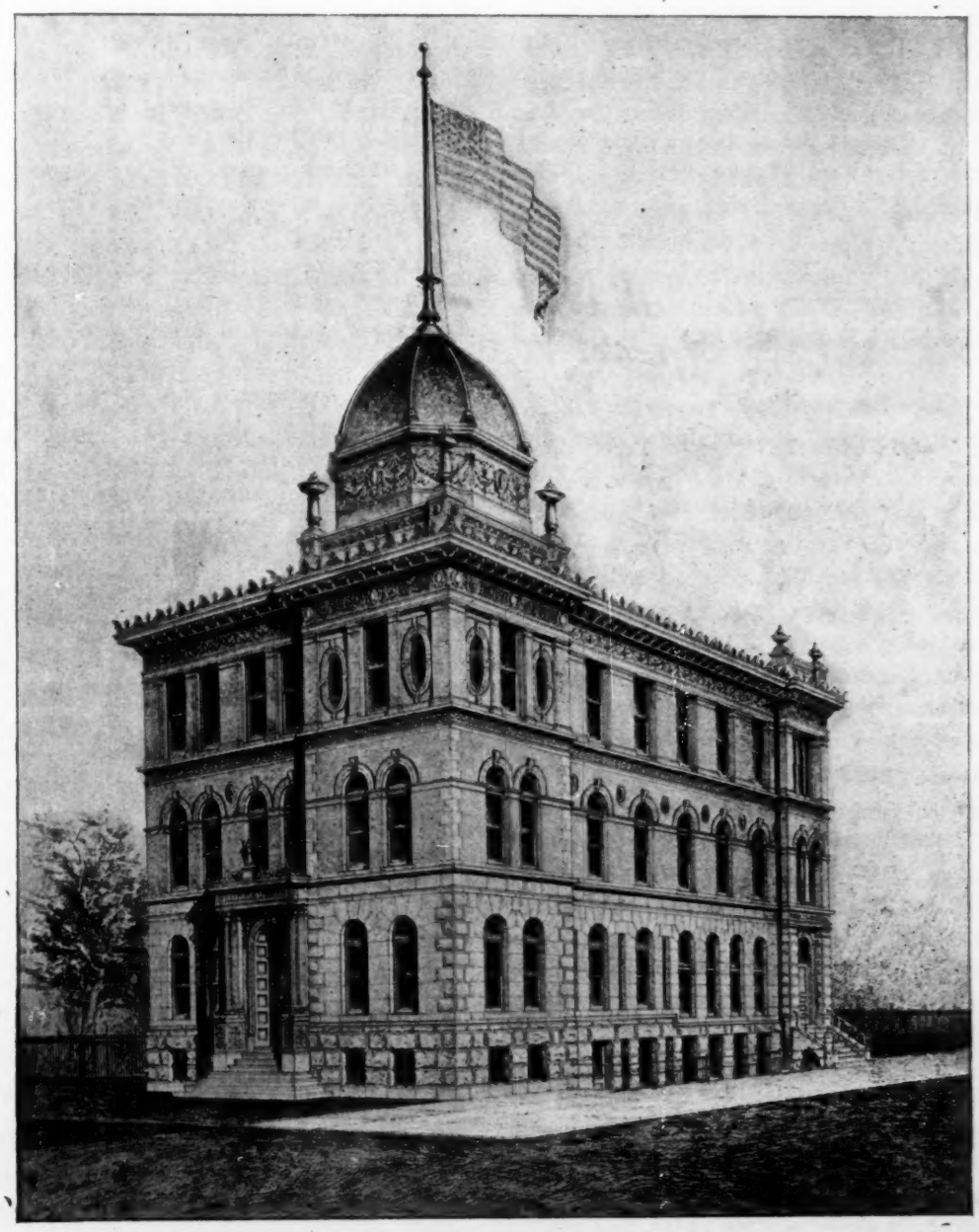
An annual report worthy of special mention on account of its original features and artistic typography is that just issued by the department of public works of Peoria, Ill. This book reflects much credit of City Engineer Thompson and Commissioner Clark.

HOBOKEN'S NEW LIBRARY BUILDING.

The new free public library building a Hoboken, N. J,. is nearly completed, and the trustees expect to have the formal opening on March 29. The original appropriation for the building amounted to $50,000. This was for a building 40 feet by 90 feet, but afterwards the trustees purchased an additional lot, so as to have a building 50 feet by 90 feet, and the contracts, exclusive of the furnishings, came to $73,000. That amount included the heating, electric light work and chandeliers. The furnishing of the library will amount to about $3,000, and are finished with gold-colored pressed bricks and terra cotta. The corners and the cupola are covered with copper covered ornaments.

The building will be devoted to two purposes, part being used for a public library and part for a manual training school.

The training school occupies one-half of the second floor, and the entire third floor. In the basement are the boiler room, coal vaults, and a workshop for the library, a large room specially designated for the trustees, and a large store for materials for the industrial department.



PUBLIC LIBRARY BUILDING, HOBOKEN, N.J.

for the manual training school to $4,000, so that the total amount, it is expected, will not be less than $80,000, of which amount $26,000 was donated by the Stevens family.

The building has a frontage of 50 feet on Fifth street, and 90 feet on Park avenue, and there is an extension in the rear 20 feet by 28 feet. There are three stories and a basement cellar. The structure is built in the Italian renaissance style. The basement and the first story are faced with Indiana limestone, and the upper two stories

Entrance is obtained to the library through a corridor into a large hall, where the book borrowers will make their selections, and on one side of the corridor facing west is a spacious ladies' reading room. On the east side of the corridor is a reference library, and further along is the librarian's office and the room where the catalogues will be prepared.

The grand staircase leads up to the second floor, where are to be found reading rooms and a book or stock room.

This latter occupies the entire width of the building. A large lecture hall and the manual training hall occupy the north end of this floor, besides a room for the trustees of the school.

The domestic economy department is located on this floor, and a large room in the extension will be devoted for the present to the formation of a museum furnished with the work done in the training school. Rooms for clay modeling, cabinet making, wood carving, and another large lecture room, 50 feet by 45 feet, are all located on the top floor.

The interior finish of the library will be in antique oak, and the furnishings will also be antique oak, while the "trim" will be of Louisiana red cypress. The "trim" of the manual training school will be North Carolina red pine, with oak furniture.

There are 17,500 volumes in the Hoboken library, and the annual circulation is about 115,000 volumes. The annual city appropriation for the maintenance of the library amounts to $8,500. Thomas F. Hatfield is the efficient librarian.

CITY WORKS IN PARIS.*

BY GEN. C. H. T. COLLIS, COMMISSIONER OF PUBLIC WORKS, NEW YORK CITY.

The streets of Paris are of three classes. First, those that belong to the whole people of France, which may be called national highways; second, those that are solely municipal streets, and third, those that have been laid out by private owners and are not accepted by the city until all the drainage, water pipes, pavements, etc., have been laid at the cost of the owner of the property. All work done by the proprietors mentioned in this last class is under the supervision and according to the formula of the municipal authorities. The Rue de Rivoli, for instance, is a national highway, and all money expended upon it, whether for paving or for cleaning or for drainage, is shared between the national government and the city government in proportions which I have not been able to ascertain. The Avenue de l'Opera, on the other hand, is a municipal street, and all these expenses are paid by the municipal government.

The pavements of Paris are of several kinds—the macadam, stone blocks (known in America as Belgian blocks), the granite, "le gres" (known in America as the ordinary granite pavement), the wooden pavement, the sheet asphalt, and recently the block asphalt, which is used in the uptown streets of New York, so that Paris may be said to be paved with a harlequin pavement, wood largely predominating for the last three years.

The macadam pavement was introduced during the late empire. In the revolution the Belgian block was availed of by the people for erecting barricades, for which they were admirably adapted, and the macadam pavement, composed of small stones and sand crushed and rolled together, removed this menace to the powers that were, but the granite blocks were permitted to remain alongside the curb to form a gutter. About this same time, however, the great sewer system of Paris was being constructed, and it was found that one of the principal difficulties under which the sewers would labor would be the washing by rains of the macadam surface into the sewer basins and thence to the underground system. In addition to this, experience taught that these pavements were not sufficiently durable to resist the heavy traffic in circulation in the streets of Paris, the injury to the roads requiring constant repair, making the maintenance of them very expensive (about 50 cents a square yard annually for repairs). It therefore became important to look for a substitute, and then the pavements which are called in New York the granite pavements, such as is now in use on Fifth avenue, were introduced. This was laid on seven inches of sand without any concrete foundation. It did not take long, however, to develop the fact that sand was not a sufficiently strong foundation for such a pavement, since when many of such pavements have been laid on concrete as a foundation. These pavements are not only exceedingly noisy, but the interstices between the blocks receive and retain decayed vegetable and animal matter for long periods of time, creating in the summer unpleasant odors and exciting the criticism of the medical faculty. As the Parisian government is very careful about such matters, it has during late years been laying pavements which shall have substantially a smooth and even surface from curb to curb. In fact, owing to the poor foundation and the large joints of these granite pavements, and particularly wearing at the corners, holes and ruts have formed, making them very much resemble the old-fashioned cobblestone pavement. These pavements when laid upon about six inches of concrete and a little cushion of sand cost $3.50 a square yard. They are laid by the city itself and not by a contractor; therefore, the $3.50 does not include any guarantee for maintenance. Our granite pavements in New York cost about the same amount, but this cost carries with it a guarantee of two years' maintenance.

Asphalt pavements have been in use in Paris for thirty years, but never on a very great scale. There is, however, a great prejudice against asphalt in Paris owing to its slipperiness, which is in a measure overcome by constant sprinkling of a mixture of crushed stone and sand, the quality of this composition depending very much upon the grade of the street. This method is objectionable because it results in a quantity of soil being carried into the sewers.

The wooden pavements are made of all kinds of wood from every part of the world. The wooden blocks are laid upon six inches of concrete without any sand cushion, with very wide joints filled with a very liquid cement of fine gravel and bitumen. The cost of the wooden surface itself, not including the concrete, varies from $2 to $4.75 a square yard, according to the material and traffic. At all elections, since wooden pavements were introduced in Paris, the candidates for the municipal council have found it to their advantage to pledge themselves to the construction of wooden pavements in the streets running through their respective districts. This has resulted in the laying of many pavements of a very poor quality of wood. I have traversed a good deal of it myself, and

*From an article by Gen. Collis published in the New York "Sun."

have found many pavements of this kind, which I can only describe as being exceedingly "bumpy," that is to say, a person riding over it in a cab experiences very much the same motion he would in riding over a badly paved granite street in New York. They are, of course, very noiseless. There is now growing up a prejudice against these wooden pavements, especially among medical men. Originally, the joints between these blocks were filled with bitumen ; this, however, wore out or crumbled, and they now substitute a very liquefied cement but, owing to the porous character of the wood, there is a constant absorption of liquid in wet weather, and in summer time the heat so expands the blocks that it has become necessary to leave a space of about 3½ inches between the pavement and the curb to allow for expansion, and these spaces are filled with ordinary green clay, because any harder material would offer no opportunity for the expansion of the blocks. The result of this is that quantities of animal and vegetable matter become deposited between the pavement and the curb which the brushes of the street cleaner cannot reach. About three months ago some men occupied in removing this clay were attacked with an illness which indisputably came from the microbes generated in these deposits.

The most recent pavement being tried in Paris is the asphalt block pavement, similar to that which is laid in the upper parts of the city of New York. I saw it on the Rue St. Martin, behind the Tour St. Jacques, and that was the only street, whether granite, asphalt, or wood, which I did not see sanded. I am told that two eminent government engineers, Messrs. Geng and Rouleau, have reported it absolutely *non glissant.* These blocks are laid on six inches of concrete up to the curb, as they are not liable to the influence of the weather causing either contraction or expansion. They are laid very flat, perhaps too much so, having hardly any crown in the centre. In addition to the concrete, they have a cushion of 1¾ inches of sand. The joints are filled in with white sand which comes from Fontainebleau and is known as hour-glass sand, because used by the ancients in their hour glasses. This sand is put in dry, without any admixture of bitumen or cement. There has not been a sufficient lapse of time to give this new pavement a good test. The one I saw has been laid about three months on a street of very heavy traffic, and it certainly has not shown any effects of wear up to this time.

THE PAVING PROBLEM NOT SOLVED.

I should say, from what I saw and heard, that Paris is just as much in a condition of perplexity as to the respective merits of the various modern pavements as we are. Slipperiness is the most annoying and difficult problem to solve. Every sidewalk in Paris, excepting those where the roadway is macadam, is encumbered by deposits, at intervals of about three blocks, of two cubic yards of sand, neatly and shapely trimmed, it is true, but too unsightly to be tolerated in an American city, which is consumed daily in making a rough surface by sprinkling, over which horses may safely travel. In some places small broken stone about the size of a bean is used instead of sand, and when pulverized by the traffic forms an admirable foothold. When the rain comes, however, as it does come more or less every day at this season, all this earth is converted into a slushy mud, which remains upon the surface until the street cleaner sweeps it into the sewer basins in the early morning, and then for a few hours Paris looks sweet and clean. This mud is carried by pedestrians into omnibuses, cabs, shops and hotels. The only people who don't seem to care a gaiter button for it are the women, who never permit their petticoats to come within six inches of the pavement.

I think our new pavements are better laid than those in Paris, but we are a long way behind them in repair and maintenance. The method of repair is simple and unique. Repair gangs on the wooden pavements consist of three men, a hand-drawn cart full of blocks, a wheelbarrow full of sand, two crowbars, a hammer, a watering pot and a broom. One man removes the old blocks, another assorts the material, and the third, who is a skilled mechanic, kneels at his work as a cabinet maker or a joiner would in laying a hard-wood floor. A thickness of about one inch of cement is first carefully laid over the old concrete and when the blocks are in position the man with the watering pot floods the whole with a very thin mixture of the same material.

For the present year, 1896, the sum of fourteen millions, four hundred and five thousand francs (nearly three millions of dollars) has been appropriated for the maintenance and repair of streets and sidewalks. This does not include street cleaning.

THE SEWERS OF PARIS.

With the sewer system of Paris, of course, the whole world is familiar. I had the good fortune to be taken through by a government official and an interpreter during a season when the public are not admitted, thereby giving me an opportunity not only thoroughly to examine, but thoroughly to inquire. These sewers are 722 miles in extent, and, under a new law, 12,000 houses have, so far, been directly connected with them. Everything but garbage is carried away by these sewers, including the sweepings of the streets, which avoids the necessity of carting away the sweepings, as we have to do in New York, and renders the problem of keeping the streets clean easy in comparison to ours; yet they are not nearly so clean, although Paris pays annually $1,843,930 for street cleaning and sprinkling with water.

Formerly all the drainage of the sewers was emptied into the Seine, but now the sewage is deposited on sandy plains in the surburbs, which are thus being converted into fertile tracts of land. These localities are Gennevilliers and Acheres; the tracts are called *champs d'epandage* (impounding fields); this land is of great extent, and produces all the domestic vegetables except salads, which, I discover, require sprinkling with water on the top to bring them to the high standard demanded by the French palate.

ABOUT STREET PAVING.

The April number of "City Government" will be devoted largely to the important subject of street paving. Illustrations of beautifully paved streets will constitute a feature of the issue.

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NOTE AND COMMENT.

"For forms of government, let fools contest.
That which is best administered is best."

The combination of the old gas companies of Buffalo was quite sharply attacked by Ex-Senator Laughlin, the attorney for the new Queen City Gas Company, at a recent meeting of the aldermanic lamp committee. The matter before the committe was the proposition of the old companies to supply gas for street lighting at $1 per 1,000 feet on a one-year contract, 90 cents on a three-year contract, and 80 cents on a five-year contract. Mr. Laughlin argued against the letting of a long-term contract, and said:

"I am here to admonish you to go slow into entering into any long contract for street lighting by gas. Next season our company will be in a position to bid with other companies for a very large part of the city lighting. It would therefore be an object to the city to avail itself of our competition. The old companies have practically tied your hands from competition. There is a bill in the Legislature now fixing the price of gas at 80 cents. It is our desire that this bill should pass, and our company will do all that it can to secure its passage.

"The old companies can easily supply the public with gas at 80 cents per 1,000 feet. I have figures before me showing the earnings of only one of these companies for the past twenty years. They are astounding, more so than the revelations of trusts. In 1875 the Buffalo Gas Light Company was capitalized at $500,000. From 1875 to 1896, both years inclusive, this company has paid in dividends, on the capital stock, $2,635,000. In addition to that it has increased its capital stock to $1,000,000. It has also issued script in addition to that $1,000,000 amounting to $260,000. From October 1, 1880, to 1887 it has paid seven per cent. cash earnings on this $1,000,000, and this $260,000 script. And from 1888 to 1896 inclusive, it has paid 10 per cent. cash earnings, making a total cash earning for this company in twenty years of $3,000,000."

The competition promised by the entrance of the new Queen City Gas Company into the field has forced the Buffalo Gas Trust down to an immediate 80-cent rate on a five-year contract. The Brooklyn Gas Trust is more fortunate—it has no promised competition—and its new five-year contract is a much better job than the Buffalo affair. This contract exacts from private consumers $1.20 a thousand for the first year, with a 5-cent yearly reduction to $1 for the fifth year, and from the city $1 a thousand at the start, with a 2½-cent yearly reduction to 90 cents for the fifth year. If the Buffalo trust is anxious to sell gas to the city at 80 cents, why is it that the Brooklyn trust, which has a larger and more lucrative field, must have a rate varying from $1 to 90 cents? With the gas trusts, it is simply a question of taking all they can get.

The city of Denver needs enlightenment on the subject of asphalt paving. The property owners of the Colorado metropolis, misled by their board of public works and the local press, continue to deprive themselves of the benefits of competition in the matter of letting contracts for asphalt work. Hugh Murphy, who has several times submitted the lowest bid on proposed asphalt paving in Denver, has always had his bid thrown out by the board of public works on the subterfuge that the Alcatraz material which he proposed to use was of an inferior quality. Mr. Murphy is a contractor who is fully capable of carrying out any agreement into which he enters, and he has been unjustly discriminated against by the Denver board of public works. Therefore, we are impelled to present his Denver experience correctly for the information of city officials throughout the country. If the members of the Denver board of public works have ever taken the pains to study the comparative merits of the various

asphalts, and they probably have, they certainly must know that their action in excluding the Alcatraz material on account of inferior quality is absolutely unreasonable. It is true that the California product which Mr. Murphy uses in his work has not had the same test of time that has been given other materials, for the reason that it is comparatively new; but reliable chemical tests have shown that it has the qualities to insure durability. Analytical chemists who have carefully investigated all the asphalts do not hesitate to state that the Alcatraz product is equal for paving purposes to any other. Some of these scientfic experts have even allowed the Alcatraz material points of superiority. Bad pavements have been laid with Alcatraz asphalt, but if this is proof of unfitness, then all the asphalts known to mankind are unfit for street paving, because bad work has been done with all. Paving experts agree that a bad pavement will result from the use of the very best material, if not properly manipulated. The Denver commissioners cannot justify their position by pointing out a bad pavement made with the Alcatraz material, for bad pavements made with all the other kinds of asphalt can be shown. Nor can the commissioners claim that Alcatraz asphalt has produced none of the best pavements in this country, for some of the prettiest, best laid and most durable asphalt streets in existence are of the Alcatraz brand. If Alcatraz asphalt is good enough to give New York and Brooklyn perfect satisfaction it ought to be fit for use in Denver. The contention of the Denver board that Alcatraz asphalt is of an inferior quality fails utterly upon investigation.

There is another aspect to the Denver case which makes it all the more reprehensible, and that is the manner in which the facts are misrepresented. The daily newspapers of Denver have made it appear that the United States Court has sustained the position of the board of public works in this matter. Mr. Murphy, who is not a resident or taxpayer of Denver, but who lives in another state, brought suit against the city to force it to give him a contract on the ground that he was the lowest responsible bidder. The city met the suit with the contention that the law providing for the granting of public work to the lowest bidder was intended for the benefit and protection of taxpayers and not for the benefit and protection of contractors; that Mr. Murphy was not a taxpayer, did not sue as a taxpayer, and therefore had no standing before the court. Of course, this contention was correct, and it was on this technical point of law, and not upon the merits of the case, that Mr. Murphy lost his suit. The Denver board of public works threw out Mr. Murphy's bid on the ground that the Alcatraz asphalt he proposed to use was of inferior quality, and this position has never been sustained by the court, despite the inference of the Denver press to the contrary.

"City Government" publishes the facts in the Denver-Murphy case as a simple matter of justice to a home product—Alcatraz asphalt. A representative of this paper who has visited the deposits of asphalt in California is convinced that there is enough of that material there to pave every street in the United States, and, as it has been proved as good as any of the imported brands in quality, we are quite naturally anxious to see it treated fairly. We do not care to see the chances of this American product impaired by any erroneous impressions that city officials may gather from the much misrepresented Denver affair.

Mayor Green, of Binghamton, N. Y., has vetoed a resolution to pay aldermen annual salaries of $300 each. He is of the opinion that the salary is much too small to tempt business men to enter contest for election and just large enough to invite "pernicious activity" among candidates not qualified for the office. Furthermore, he believes the salaries would add unnecessarily to the burdens of the taxpayers. The board of aldermen sustained the veto.

There is an item going the rounds of the daily press to the effect that Philadelphia receives $11,000,000 a year for street car, telephone, gas and water franchises. This story has the same amount of truth in it as that utterly false and widely published statement about the govenment of Glasgow being self-sustaining. Daily newspapers—and some of the monthly magazines, also—would better preserve their reputations for veracity by investigating items before giving them publicity.

The Kansas City council has passed an ordinance prohibiting the sale of cigarettes to minors. Now, if some ingenious gentleman will only invent a smoke consumer for the use of cigarette fiends over 21 years of age, the nuisance might be entirely abated in Kansas City.

When Edward J. Darragh, who is only about 30 years of age, was elected corporation attorney of St. Paul two years ago, the prediction was made by several disgruntled old men that "the taxpayers would be submerged in verdicts as high as the court house." When Mr. Darragh retires from office this month, on account of a change in the political make-up of the council, he will leave a record that compares most favorably with that of any of his predecessors, and the senile persons who criticised him in advance will have to acknowledge their error of judgment. During the two years of Mr. Darragh's service as corporation attorney actions to recover money judgments against the city aggregating $518,560 were prosecuted and the city had to pay only $25,274 of this amount, which is far below the total sum recovered from the city during the term of any preceding corporation attorney. With these figures in mind, the best compliment we can pay to Mr. Darragh is to note that among his predecessors were William Pitt Murray, old enough to be his grandfather; Daniel W. Lawler, a former candidate for Governor of Minnesota, and at present chief counsel for the Chicago and Great Western Railway, and Leon T. Chamberlain, now counsel for the Northern Pacific Railroad.

EUROPEAN AND AMERICAN FIRE SYSTEMS.

[Extract from a letter to the Illinois Firemen's Association from Thos. P Purcell, chief of the fire department of Dublin].

The difference between your fire service and that of Europe is indeed very great, and I can safely say the divergent lines upon which both are constructed are never likely to meet or merge into a uniform one. There are very many reasons why it should be so. Your cities and towns are altogether so different from ours, the exigencies of trade, the cosmopolitan character and habits of the people and difference in climate must be taken into account. Such of your citizens as have never been to Europe can have no idea of the very marked difference which exists between the style of our cities and the character of buildings which constitute them, in comparison with those of the western American cities that I have seen. In the words of an American friend who visited me after travel in Europe, "We seem to do everything just as if it was to last forever." This is literally true as applied to constructional engineering, building and public works.

Our cities originated many centuries ago in troubled, lawless times, were generally put up with a view to defense against marauding bands, or outside invasion, and enclosed by walls or fortifications (since removed), crowding a dense population on a small area. This led to strong walls and enclosures, narrow and sometimes irregular streets, which the past generations have been trying to widen and straighten, but never to the temptation of going skywards as in America.

The houses of three to five and rarely exceeding six stories above the basement, which are principally of stone on the continent and many parts of Great Britain, are in Dublin mainly constructed of well-burnt bricks, and in the better classes of buildings under modern by-laws, all the internal divisions are also of bricks. The streets and terraces have front line continuous, with yard or garden spaces at rear, party walls between different houses carried up above the roof, and none of the numerous narrow alley ways and dividing spaces exist, which are so noticeable and a source of much fire risk in your cities. Then our roofs are all high pitched and covered with fire-proof materials, slates, tiles, etc., hence are not so readily affected by reflected heat or falling sparks from neighboring fires. Consequently we rarely allow a fire to extend to adjoining premises, and never across a thoroughfare. The total absence of wood in cornices or outside trimmings has much to do with this immunity.

The lime used generally makes an excellent mortar and plaster, which hardens, toughens and otherwise improves by maturity, and forms a good protection against the effects of fire, so much so that I have often seen the windows and contents of a room burned out without affecting any other portion of the building, even where the inner partition was formed of lath and plaster, provided the door happened to be closed.

Now, I have seen as fine and substantial buildings in your cities as any to be found in Europe, but you have too few of them, and far too many of the other class. With the exception of office buildings our business houses re generally smaller and usually occupied by a single firm or proprietor; this contrasts very strongly with the system of several separate manufacturing and trading risks which I have noticed on the different floors of single buildings in your cities.

No doubt some of our warehouses, owing to large floor area and open construction through several floors, supported on unprotected cast iron columns, with inflammable contents, are just as bad from a fire point of view as any in America, and we are equally powerless to save them should a fire get any start of us. I very much fear the requirements of trade will always make this condition more or less inevitable.

So much for the buildings. Now for the habits of the people. It is a subject I would rather not touch. However, I will say that very many residences and business establishments have been owned by successive generations of the same family, and that no insurance would compensate or cover the loss caused by the break in an old business connection, due to interruption by a fire, and although some defects in construction may creep in, yet greater caution and care in avoiding accident or fires is exercised than I believe is usual in your country. Again, once our business men settle down to cultivate a connection, they rarely have a disposition to change to another city; not so with your people. We have frequently found a direct connection between fires and the occupation of foreigners, or new-comers, who have not established a permanent interest in the community.

As to climatic effects, we experience none of the awful blizzards or tornadoes so prevalent in America. The snows are not severe and our water mains are safe from frost two feet under the street pavement. Even our summer heat does not parch up everything, as with you, requiring only a spark to start a conflagration. You can readily imagine what a bearing all this has on the safety from fires and the extinguishing of them when they occur in comparison with what prevails in America.

That fire departments in Europe are feeble in equipment, undermanned and underpaid in comparison with your departments, goes without saying, but when all attendant conditions are taken into account they would perhaps be found—except in the larger cities—fairly well proportioned to the general requirements. Certain it is that many severe lessons learned in America by disasters from fires and the ever-present dread from impending danger, as well as the rapid, almost phenomenal growth f cities, must ever act as an incentive to maintain your departments at high water mark, as to strength and equipment. Compare with your cities my department of forty-seven all told, with eight horses for apparatus, having charge of a city with important interests and every variety of risk, of 400,000 inhabitants—fifteen members being absent on escape duty every night in the year!

I inspected your stations and apparatus—which appeared to be generally perfectly constructed with a view to practical utility and maintained regardless of cost, with agreeable surprise. The engines in general are more powerful, and taking suction direct from the mains or permanent cisterns are relatively more effective and work at a higher pressure than ours. The extension ladders, trucks and water towers are all fine pieces of apparatus,

but would be too heavy and unsuitable for general use in the narrow thoroughfares of our cities.

I cannot praise too highly your modern fireboats and when used in connection with special mains, having water side attachments as introduced by Chief Foley and adopted in the city of Milwaukee, I cannot conceive any more effective protection to important manufacturing or business sections of a large city.

The American alarm system is a long way ahead of any arrangement for this purpose in Europe. We largely rely on the telephone system.

I consider we have a great advantage in most of our cities, particularly in Dublin, where we rarely use steamers, owing to a permanent gravity supply of water at high pressure from large storage reservoirs. As no matter how smart a department may be in getting to work, we can invariably have several jets of water direct off the mains on to the fire, minutes before the same service could be had from a steamer. True, the higher pressure usually obtained from engine will be necessary in dealing with big fires, but, as firemen know, those form a small percentage of the total outbreaks, and the trouble as well as expense of firing a number of engines on every turnout is considerable, when looked at for the whole year. Besides, I hold a better and more compact stream is obtained from a high pressure main than from an engine, the latter being more liable to be broken before reaching its destination; at least this is my experience. The system is not liable to interruption, as in most American cities, depending on pumping machinery or standpipes, owing to liability of the latter giving out.

As to our system of working when we get to the fire, there is comparatively little difference, here at all events; we consider water applied in the proper place, and in suitable quantities, the best extinguishing agent. We fight at close quarters, either by the stairs, ladders or adjoining roofs, and not for the benefit of spectators as is too often depicted in British pictures drawn by artists from imagination; where brass helmeted firemen are shown gracefully squirting from the street level, against the exterior of a building supposed to be on fire, utterly regardless of all useful effect.

A NASHVILLE EXPERIMENT.

EDITOR CITY GOVERNMENT:

With our city engineer, Mr. J. A. Jowett, and our superintendent of streets, Mr. Patrick Cleary, I went to Paducah, Ky., a short while since to inspect the material used in constructing of streets of that city. We found the material to be a kind of ferruginous gravel which is very abundant in that region and has been used for years on the streets. On our return, we made an informal report to my associates of the board of public works and affairs, and we have decided to try the material on one block of our streets. Our method will be to make an ordinary macadam street and cover the surface to a depth of four inches with this ferruginous gravel, and roll the same down with a 15-ton road roller. We believe the material will cohere and make a valuable surface coating for macadam streets, superior to ordinary gravel or crushed limestone. We have selected a street that will make a severe test and I will hereafter gladly give you the result of the experiment.

Respectfully, JOHN L. KENNEDY.

BROOKLYN'S NEW PARKS.

Brooklyn has been imitating New York in recent years in providing pleasure grounds in the outlying wards for a future population that must in time spread over the whole of the present thinly settled territories that are included in the city limits, and in this respect the park commissioners have been nearly as fortunate as those in New York. Certainly if the Greater New York becomes an actual fact, no one need feel ashamed of the small and large parks that Brooklyn will present to the future consolidated city. Many of these may be undeveloped, but their natural beauty and favorable location will form the groundwork for artistic landscape gardening.

This fall considerable work has been performed in beautifying all of the parks, and while the full effect cannot be appreciated until spring opens the buds and flowers of the newly planted trees and shrubs, an idea can be gained of what has been done by strolling along the paths and driveways in the dead of winter. Several thousand trees and shrubs have been planted in Prospect park this fall, including such varieties as the tulip, sweet gum, cucumber, Norway maple, umbrella, oak, linden, English dogwood, sumach, Japanese snowball, lilac and flowery currant. The aim of the superintendent has been to add as many new varieties of trees and shrubs as possible, and while many have never heretofore been found growing in the park, they have been thoroughly tested for this climate and soil. In respect to the great number of varieties of trees and shrubs successfully raised, Prospect park stands without a peer, and the student of trees and shrubs finds here an opportunity to conduct his studies without the aid of a botanic garden.

But the reputation of Prospect park has long been established, and it needs no additional embellishment to make it the wonder and admiration of visitors. The newer parks, however, have little more than their natural beauties at present to recommend them, and their future must largely depend upon the wisdom and artistic ability of the landscape gardener. Forest park, for instance, located at Forest Hill, in Queens county, has the making of one of the finest pleasure grounds in the country. The city obtained 550 acres of land at Forest Hill under Mayor Schieren's administration, and this magnificent stretch of land is now being slowly converted into a park. The land stretches over hills and ridges and commands a fine view of the ocean, Jamaica bay and more than a score of villages along the shore. Work was begun last summer to lay out walks and drives and to make various other improvements. The park itself is better wooded than any other similar large tract of land within twenty miles of New York. Fine old chestnut trees grow in groves on the sides of the hills and ridges, and century-old oaks stand in the valleys or on conspicuous summits to form landmarks for the surrounding country. Birches, dogwoods, maples, larches and many other trees mingle with the chestnuts and oaks to help clothe the land with a canopy of rich foliage. At this season of the year the woods appeal more to the timber fiend than to the lover of the beautiful, but in summer the foliage is rich beyond comparison. A great many of the trees will have to be

cut down in time to give the others a better opportunity for growth and expansion, but today they are wild and untamed enough to elicit admiration from all.

The Eastern parkway is at present being connected with Forest park, and work is also being pushed rapidly to run a broad way straight through the park from end to end. This will be finished by spring, and bicyclists will have one of the finest roads in the country opened to them. Forest park will be the attraction. The ride there along the Eastern parkway will be pleasant and comparatively short, while the welcome shade of the woods will more than compensate for any toilsome pedalling in the hot sun. The plan of the park commissioner is to keep Forest park just what its name implies, and with the exception of trimming and thinning out the trees little will be done to the forest growths. Already settlements have been built up all around the park, and it is merely a question of a few years before a considerable population will completely surround Forest park.

Dyker Beach park is small compared to either Prospect park or Forest park, but it has other advantages that partly compensate for its lack of size. At present the park is little more than flat, low meadows, which would appeal more to the gunner than to the lover of the æsthetic. But according to the plans of the park commissioner all of this is to be changed and the ugly spots are to be transformed into objects of beauty. In the centre of the marsh an artificial lake is to be constructed, and the rolling banks back of it are to be extended by filling in the low places. The lake will touch the beach on one side and reach out to a fine macadamized road that will practically be the continuation of the famous shore driveway. Already considerable filling in has been accomplished, and the new road is being constructed with a foundation of spiles and rocks and sand. A bridge over the meadow will make this new road more attractive, for in time the waters of the artificial lake will flow under it.

A few miles east of the Dyker Beach park is Bensonhurst park, which commands the finest view of the ocean, Sandy Hook, Coney Island and the highlands of Jersey and Staten Island that can be obtained anywhere in Brooklyn. This park is a small one, but for natural location it cannot be excelled. A curved beach of white sand receives the waters of Gravesend bay, and directly back of this beach a natural bluff rises abruptly thirty feet or more. On this bluff the green grass grows luxuriantly, while a few old gnarled cedar trees stand in defiance of the heavy sea gales that sometimes sweep up from the ocean. A driveway is being constructed along the beach. Seats will be placed on the bluff next summer for the accommodation of wheelmen and visitors. The water view here is almost as fine as that to be obtained at Coney Island.

The park will undoubtedly greatly benefit Bensonhurst, as it will preserve the water-front for all time from the encroachment of docks, piers and nuisances. Bensonhurst itself is one of the prettiest suburbs of Brooklyn, and it is built up with a fine class of houses, costing on an average from $5,000 to $8,000. The streets and avenues are laid out like a park, and while no large trees are growing there, it is planted thickly with young trees and shrubs that must eventually produce a very striking effect. Outside of private and public parks, a greater variety of shrubbery and trees are growing in Bensonhurst than in any similar tract of ground. The whole place is a veritable park, and in summer it is one of the most desirable resorts within a short distance of the city.—New York Post.

AN ARIZONA INNOVATION.

A recent important event in the municipal progress of Phoenix, Arizona, called forth the following comment from one of the local newspapers:

"With the introduction of the Gamewell system passes away the time-honored practice of giving notice of a fire by the discharge of revolvers. A fire was always a disclosure that a considerable part of Phoenix's population were habitual violaters of the law against carrying concealed weapons. It made no difference when or where it broke out, no fire was ever started in Phoenix which was not immediately followed by a fusilade."

NEW HAVEN STREET PAVEMENTS.

The anunal report of City Engineer Kelly, of New Haven, Conn., shows that the area of street pavements in that city is as follows:

	Sq. Yds.
Macadam top dressing	325,368
Telford pavements	253,450
Stone block	97,633
Coal tar	5,500
Cobble stone	3,816
Asphalt block	2,817
Newchatel asphalt mastic	1,022
Sicilian rock asphalt	16,587
Trinidad sheet asphalt	190
Brick	15,630

AN ITEM WORTH SAVING.

Commissioner of Health Kerr, of Chicago, has awarded to Henry McDonald a contract for removing dead animals from the public streets for a term of five years. The contractor is to pay the city a bonus of $5 for the five-year contract. By the terms of the agreement the contractor is required to remove the carcasses to a point three miles outside the city limits for rendering. The contractor is required to furnish a $200,000 bond to the city.

For a number of years the city has been paying $37,500 a year for the removal of dead animals. Under the new arrangement made by Commissioner of Health Kerr the city will save $187,500 during the next five years.

SPECIAL NOTICE.

We desire to caution all city officials throughout the New England States against James B. Brown, an elderly, thickset man, gray hair, short gray mustache, short in stature, wears a masonic emblem and claims to represent CITY GOVERNMENT. This man is not employed by us and has no authority to solicit subscriptions or collect money for CITY GOVERNMENT.

Any information that will lead to his apprehension will be appreciated.

CITY GOVERNMENT PUBLISHING CO.,
150 Nassau Street, New York.

PERSONAL.

—Frank S. Snell has resigned as chief of the Aspen, Col., fire department, and has been succeeded by P. H. O'Kane.

—Franklin Brinker has succeeded Kohn L. Walker as chief engineer of the Cumberland, Md., water works. Mr. Walker ignored the orders of the water board, and his resignation was requested.

—Casper Wells has been re-elected chief of the fire department of Amsterdam, N. Y. Chief Wells is credited with having much to do with the present excellent condition of the Amsterdam department.

—James E. Markham, for several years a member of the board of aldermen, has been elected corporation attorney of St. Paul, Minn. Mr. Markham is an able lawyer and will doubtless make a good record in his new office.

—Frederick Nussbaumer, superintendent of parks at St. Paul, Minn., has been re-elected for another term. Superintendent Nussbaumer, during the past five or six years, has made the parks of St. Paul famous for their beauty and good management.

—W. S. Jarboe, smoke inspector of Pittsburg, Pa., is now preparing an elaborate annual report which will be of value to all those interested in the abatement of smoke nuisances. It will show a thousand or more smoke consumers in use throughout the city of Pittsburg, together with information concerning their workings.

—Mayor Charles Williamson and a committee from the council of Brockton, Mass., visited Worcester recently to inspect the system of watering streets by the use of electric cars. They were well pleased with the working of this novel system. While in Worcester the Brockton officials were handsomely entertained by Col. F. W. Wellington and other stockholders of the American Car Sprinkling Co.

—Mr. P. M. McLaren, who is well known as one of the most expert and experienced boiler salesmen, has left that field and identified himself with the Atlas Cement Company, of 143 Liberty street, New York, and hereafter will devote his entire time to the interests of that company, with headquarters in New York. The Atlas Company is about completing an extensive addition to their large plant, which will give them an output capacity equal to that of any similar establishment in the world. "Atlas Portland Cement" is recognized as a high grade article, and has been used largely in government work, and is popular with many of the leading builders and contractors.

—Col. F. V. Greene, president of the Barber Asphalt Co., on the occasion of the eleventh anniversay of his connection with the company was presented with a handsome and appropriately inscribed silver centre piece by his superintendents. A portion of the decorations of the gift are six oval vignettes of incidents of Col. Greene's career. One of the etchings recalls his cadetship at West Point, another his experience upon the frontier in the United States Boundary Survey, and a third pictures him upon the staff of Grand Duke Nicoli at Moscow, Russia. The testimonial weighs 132 ounces and was made by Tiffany.

—The Association of the City Treasurers and Collectors of Massachusetts held its eighth annual meeting in Boston on Feb. 22. Those present were City Treasurers A. T. Turner, Boston; E. T. Tifft, Springfield; Pierre Bonvouloir, Holyoke; W. H. Emerson, Brockton; H. W. Gray, Quincy; J. C. Buck, Woburn; E. H. Kennedy, Pittsfield; C. F. Robinson, Marlboro; C. F. Lee, Beverly; City Collectors N. H. Taylor, Boston; Francis Norton, Springfield; J. L. Warner, Northampton; J. G. Maguire, Woburn; F. R. Strong, Pittsfield; W. D. Doyle, Marlboro, and those who held the combined office of treasurer and collector in their respective cities: W. S. Barton, Worcester; C. F. Coburn, Lowell; W. W. Dallinger, Cambridge; C. P. Brightman, Fall River; W. R. Lowe, Lawrence; J. H. Hathaway, New Bedford; J. F. Cole, Somerville; T. B. Frost, Chelsea; J. A. Glines, Haverhill; E. H. Temple, Taunton; Edward Dolliver, Gloucester; S. A. Ranlett, Newton; E. J. Sanderson, Waltham; G. E. Clifford, Fitchburg; J. V. Felker, Newburyport; Nathan Nichols, Everett; J. W. Hardenbergh. C. F. Holyoke, of Marlboro, an honorary member, was also present. The old officers were all re-elected: A. T. Turner, Boston, president; W. W. Dallingen, Cambridge, vice-president; E. T. Tifft, Springfield, secretary and treasurer.

TAXES AND FINANCE.

—City Treasurer Arthur, of Denver, Col., has prepared a statement showing the total bonded indebtedness of that city to be $1,853,800, but there is in process of collection $104,045 to pay off part of the debt, leaving the net debt $1,749,755. The assessed valuation for 1896 was $72,746,660.

—The Galveston, Tex., budget for the ensuing year as finally passed, appropriates a total sum of $634,956.83, of which $29,000 is for waterworks, $59,715 for fire department, $57,492 for police, $30,066 for public lighting, $47,300 for streets and alleys, and $19,456 for health department.

—The common council of Cambridge, Mass., has passed the appropriation bill for 1897. The total amount appropriated is $2,859,950, of which $80,500 is for the fire department, $17,500 for the health department, $70,000 for street lamps, $113,000 for police, and $19,000 for public library.

LIGHT AND WATER.

—Chief Engineer Joseph A. Bond, of the Wilmington, Del., water works has issued his annual report. It shows that the daily per capita consumption of water was 80.3 gallons.

—The gas companies of Massachusetts, while reducing their prices from an average of $1.56 to $1.10 since 1888, have increased their dividends from $939,000 in 1888 to $1,087,000 in 1895.

—Buffalo, N. Y., has made a five-year contract for electric lights. The rate is $100 per lamp, per year, all night schedule, for 2,500 lamps. The city has been paying $127.75 per lamp, per year.

—Private consumers pay $1.25 a thousand for gas in New York and Brooklyn. The price is $1 in Boston, Philadelphia, Chicago, St. Louis, Cincinnati, Pittsburg and many other places, and 80 cents in Buffalo and Cleveland.

—The Common Council of Lockport, N. Y., has directed the city attorney to draft a bill authorizing the city to bond itself for $50,000 for the establishment of a municipal electric lighting plant. The council rejected the bid of the Lockport Gas and Electric Light Co. to furnish electric lamps at $90 per year, on a three-year contract.

—The annual report of the water commissioners of Concord, N. H., shows total receipts amounting to $56,767.08; disbursements, $17,998.65; interest charges paid, $27,425.00; balance, $11,343.43. The report says: "The income shows a very gratifying gain, and the continued use of meters has demonstrated their practicability, and more will be added each year."

FIRE AND POLICE.

—The total expense of the Salt Lake City police department last year amounted to $40,466.

—The fire and police board of Salt Lake City estimates that it will require $28,455 to maintain the fire department during the ensuing year.

—Since the adoption of the Bertillon system by New York state, last August, the unassailable metric fac similes of more than 3,000 criminals have been filed in the department office at Albany.

The annual report of Chief Kennedy, of the New Haven, Conn., fire department, shows: Losses on buildings, $48,775.47; insurance paid thereon, $39,278.18; on contents, $154,024.05; insurance paid thereon, $123,538.59; total losses, $202,799.52; total insurance paid, $162,816.77; loss over insurance, $39,982.75. There were 218 alarms during the year. The total number of men in the department is 87.

—The annual report of the Providence, R. I., fire commissioners shows that during the year ending Dec. 31, 1896, there were 333 bell alarms and 301 still alarms, a total of 634. The loss occasioned by fire was, as near as can be ascertained, $396,687.68. The total amount of insurance, as near as the board has been able to learn, has been $2,622,597.05. The amount paid by the insurance companies in liquidation of losses has amounted to the sum of $332,939.59. Nearly 67 per cent. of the entire loss was caused by the burning of the Masonic building, March 19, 1896.

ROGER O'MARA'S NEW POSITION.

Roger O'Mara, for many years the chief of police of Pittsburgh, but now the superintendent of detectives, has issued his first annual report in the latter capacity. A large part of the report is devoted to a reminiscent account of the Pittsburgh police force since Mr. O'Mara's connection with it, covering a period of 31 years. Regarding the new detective bureau, Superintendent O'Mara says:

Past experience showed the need of a detective bureau, the purpose of which is not so much the detection of crime or the securing of its punishment as the prevention of crime on the well-known theory that "an ounce of prevention is better than a pound of cure." To cities where criminals know that detective bureaus are alive and efficient, and that they are liable to detection and arrest as soon as they come within the corporate limits, a wide berth is usually given.

Superintendent O'Mara says the bureau was organized for the purpose of centralizing detective work. He says without any hesitation that it has had a very marked effect in keeping the criminal classes out of the city, as Pittsburgh has not been visited during the past year by what is known as organized gangs bound upon bank or store robberies. The robberies of the past year were many, but they were small. An investigation has satisfied him that a large portion of these petty robberies were owing to the neglect of citizens to close their houses. In some cases people had vacated their houses for a season without notifying the police.

The superintendent lays stress on the importance of the Bertillon system of identifying criminals, just introduced into the bureau, and says the detective force should attract to it the very best police material there is in the department, men of natural adaptability; they should be encouraged and better paid than the ordinary police service usually merits.

"While treating of the question of prevention of crime," he says: "I desire to say that the best detectives in the country and those who are most properly qualified for their position are those who, in addition to great natural ability, are in love with their work. And, while I speak of natural ability, I must say that, though there are many detectives in this country, there are few who have that keen conception of human character and are such close readers of human physiognomy that they can pick out a professional thief in a crowded street, a large gathering or assembly, or even walking alone on the street, though professionally wholly unknown to them. This is the first and chief characteristic of a good detective. There is an unwritten something, or an uneasy rest, which may be indescribable, that to an observing and thoroughbred detective always leads to identification. Nor is this faculty wanting upon the part of a criminal. A professional criminal can most unerringly pick out in a hotel, depot or public street, or anywhere, a detective, though being entirely unknown to him, and he usually steers clear. They are seldom, if ever, mistaken."

AN INTERESTING WATER WORKS CASE.

An interesting suit has been brought against the Ashland, Wis., Water Company. Mrs. Julia L. Green has sued the company for $5,000 damages for the death of her husband. Green died of typhoid fever during the epidemic two years ago, and the complaint alleges that he contracted disease by drinking impure water furnished by the company when its franchise called for pure water. Already Mrs. Green's attorneys have secured depositions from some of the most noted medical experts and chemists in the country. If they win it will be a bad blow to the Ashland Water Works Company, as there are many cases awaiting the result of this action, and they will be brought at once in event that the water company is held liable for damages to Mrs. Green. This is the first case of the kind that has been tried in Wisconsin, and the legal profession is watching it with interest.

TRASH RECEPTACLES.

Acting upon the suggestion of Mayor Jones, the board of public works of Kansas City, Mo., has introduced the use of trash receptacles in the business districts of the city. The receptacles are thirty inches high and about eighteen inches in diameter. They are provided with heavy iron handles and legs which raise them an inch from the sidewalk. The bottom of each is perforated with five large holes, so that no water can remain in the can. They are to be used only for sweepings and dry trash. The receptacles are placed one on each street corner and one in the middle of the block on each side of the street. The street department will empty and clean the cans daily. Hereafter persons who persist in throwing refuse in the streets will be liable to arrest.

BOOKS ON CITY AFFAIRS.

"Municipal Reform in the United States," by Thomas C. Devlin, is a late and valuable addition to the literature on American civic affairs. The work reviews the progress of the municipal reform movement in this country in a way that is just sufficiently critical to remove the cloak of deception and bigotry from the many unthinking individuals who have indiscriminately condemned every existing condition of American municipal administration. The radical municipal reformers will not be entirely pleased with Mr. Devlin's work, because it does not severely and indiscriminately criticise our whole system of city government and because it finds too much in this American system to praise. Mr. Devlin does not agree with the professional theorists, who would absolutely destroy every feature of American municipal government to make way for thorough reconstruction on the European plan. He clearly shows the impracticability of European systems when applied to American cities. The suggestions made in this new work for improvement in the government of our municipalities are based upon existing natural conditions that cannot be altered, and, therefore, they are practical and worthy of consideration. City officials and all citizens who are interested in the work of practical reform will find "Municipal Reform in the United States" well worthy of careful perusal. The book is published by G. P. Putnam's Sons, 27 West Twenty-third street, New York.

"Municipal Government in Great Britain," by Albert Shaw, who is probably the best informed writer on municipal topics of our time, is a work that cannot fail to be a potent agency for the promotion of better city government in the United States. Dr. Shaw, whose style is logic itself, does not urge an imitation of British methods by American cities, but reasons that many of the reforms accomplished in the government of Great Britain's cities may suggest ways for improving our own rather faulty municipal conditions. Obviously, Dr. Shaw's purpose in drawing attention to the limited suffrages allowed in Great Britain and the real honor that attaches to an aldermanic position in that country is to remind his American readers that the people against whom their forefathers fought for independence are today endowed with a degree of patriotism worthy of emulation on the part of the younger nation. The character of the British alderman or councilman is depicted so that it forces into our minds a comparison very disparaging to that common type of American official made possible by ward politics. Dr. Shaw shows to his countrymen the exemplary character of the British alderman, and it is quite likely that the example thus displayed may speed the parting of the American ward politician.

The most valuable features of "Municipal Government in Great Britain" are the chapters in which the author discusses the sanitary and street cleaning conditions and laws, how epidemics are met, tenements made less crowded, the city refuse cared for, pipes laid in streets, electric and gas lighting, street sprinkling, paving, swimming baths, sewerage, markets, fire and police departments, finance, libraries, park, and all other departments of municipal work as carried on in Great Britain. While the methods pursued in British municipalities may not be wholly adaptable to American conditions, many points are presented which may be profitably studied by those officials and citizens who are striving for improvement in the administration of our city affairs. Dr. Shaw's excellent work is published by the Century Company, Union Square, New York.

"American Highways," by Prof. N. S. Shaler, is a practical book on the science of road-making, beginning with the general history of road-building, early Roman roads and early American roads; the effect of the climate upon roads is fully treated in a chapter by itself; next comes a consideration of the nature and distribution of road materials and their methods of use and of testing, methods of constructing roads, machines used in road-making, the cost of road-building, suggestions as to different roads for different parts of the country, the cost of gravel roads, macadam roads, etc. There are also appendixes giving the Massachusetts laws relating to state highways, laboratory on road-building stones, table of contract prices on Massachusetts roads, and a list of all the important works on highway construction. The book is fully illustrated with pictures showing good roads and bad, and with plans and diagrams. Published by the Century Company, Union Square, New York.

MUNICIPAL REPORTS RECEIVED.

During the past month the following printed reports have been received at the CITY GOVERNMENT office:

Salt Lake City, Utah.—Mayor's Annual Message. [February, 1897.] From James Glendinning, mayor.

Baltimore, Md.—The Financial Reports of the Mayor and City Council. [December, 1896.] From Charles D. Fenhagen, city comptroller.

Pawtucket, R. I.—Annual Report of the Board of Public Works. [1896.] From George A. Carpenter, city engineer.

Washington, D. C.—Report of the Operations of the Engineer Department of the District of Columbia. [1896.] From Maj. Charles F. Powell, engineer commissioner.

Columbus, Ga.—Annual Reports of the Officers of the City of Columbus. [1896.] From R. L. Johnson, superintendent of public works.

Kansas City, Mo.—Seventh Annual Report of the Board of Public Works. [1895–6.] From H. P. Langworthy, secretary.

Malden, Mass.—Inaugural Address of Hon. John E. Farnham, mayor. [January, 1897.] From the mayor.

Chattanooga, Tenn.—Annual Report of the Mayor. [1896.] From George W. Ochs, mayor.

Providence, R. I.—Second Inaugural Address of Edwin D. McGuinness, mayor. [January, 1897.] From the mayor.

Indianapolis, Ind.—Comptroller's Report. [1896.] From E. M. Johnson, comptroller.

Detroit, Mich.—Eighth Annual Message of Hazen S. Pingree, mayor. [1897.] From the mayor.

Peoria, Ill.—Fifth Annual Report of the Department of Public Works. [1896.] From A. D. Thompson, city engineer.

TRADE NOTES.

—McAdoo, Pa., and Warwick, N. Y., have ordered additonal fire apparatus from the Gleason & Bailey Mfg. Co.

—New York City has placed the order for the first lot of trussed ladders for hook and ladder trucks with Gleason & Bailey Mfg. Co.

—The Omaha board of public works let the Sixteenth street paving contract to Hugh Murphy. Alcatraz asphalt will be used in the work.

—Chatto & Condon, of Brookville, Me., have been awarded the contract for furnishing the city of Fall River, Mass., with 300,000 paving blocks.

—The Gamewell fire alarm system has been put in at Birmingham, Ala. The city officials are highly pleased with the working of the Gamewell apparatus.

—Chief Geo. C. Hale, of Kansas City, Mo., has placed an additional order with the Vajen-Bader Co., for their helmets, they having given the best of satisfaction.

—Chief Walter S. Moore, of the Los Angeles, Cal., fire department, has placed his order for the Vajen-Bader helmet in connection with new equipment for his department.

—The Holly Company, of Lockport, N. Y., secured the contract for furnishing the North Tonawanda waterworks with a new 6,000,000-gallon pumping engine, at $14,837.

—The Townsend Brick & Contracting Co., of Zanesville, O., have been awarded the contract for paving over a mile of Fourth street, Marietta, O., with Townsend repressed brick.

—Chief F. L. Stetson, of Minneapolis, and Chief Geo. A. Steere, of Providence, have each purchased several of the Vajen-Bader patent smoke protectors for use in their respective departments.

—The Union Akron Cement Co. is furnishing Akron Star brand cement for use in building an addition to the Brooks Locomotive Works, Philadelphia, and also for the Willard State Hospital, Willard, N. Y.

—The United States Fire and Police Telegraph Co., of Boston, who have put in many excellent municipal telegraph systems, report a constantly increasing business. They have lately taken some very nice contracts.

—Chief Geo. Fallrath, of Springfield, Ill., and Chief Edward Heffran, of Rockford, Ill., have recently adopted the Vajen-Bader patent smoke protector and have partially equipped their fire departments with these helmets.

—The Archibald Wheel Co., of Lawrence, Mass., expect to offer before April 1, 1897, the finest dust-proof, self-lubricating, roll-bearing wheels and axles ever invented for hose wagons, etc. These new wheels and axles will be without extra weight or bulk.

—The La France Fire Engine Company, of Elmira, N. Y., recently shipped two of their largest first-class fire engines to San Francisco. The shipment completes an order of four, two engines having been shipped some time ago. The engines were first-class both in size and workmanship, and were handsomely and artistically finished.

—"Contractors' and Quarrymen's Sketch Book" is the title of the beautifully printed and illustrated volume just issued by the American Hoist & Derrick Company, of St. Paul, Minn. The book contains pictures of many of the hoisting plants made by this company, which, by the way, is one of the most important concerns in its line in this country.

—The St. John's Lutheran Church, of New Britain, Conn., is very nearly completed. The steel roof trusses will soon be in place. These trusses have a curved outline, will be exposed, and give the roof a light and ornamental appearance. The contract for furnishing and erecting the trusses has been given The Berlin Iron Bridge Company, East Berlin, Conn.

—R. D. Wood & Company, of Philadelphia, have received the contract for furnishing the board of water commissioners of Hartford, Conn., with 36,200 feet of water pipe for use during the coming season. Their bid was $18.95 per gross ton; the Chattanooga Foundry & Pipe Works bid $21.19; M. J. Drummond, $20, and the McNiel Pipe & Foundry Company, $19.75.

—"Adequate Revenue for Support of the Federal Government" is the title of a lecture, by Henry C. Frink, 234 Broadway, New York, which has been published in pamphlet form. The lecture favors the abolition of customs duties and internal taxes, and advances the idea of covering the entire expenses of the federal government by taxing the railroads 20 per cent. of their gross earnings.—See advertisement.

—The suits brought in August, 1894, by the Municipal Signal Company, of Boston, against the cities of Providence and Pawtucket for infringement of patents by the use of the police signalling systems installed in those cities by the Gamewell Fire Alarm Telegraph Company of New York, have been, on application of counsel for the Gamewell Company, Messrs. Dyer and Driscoll, dismissed with costs against the Municipal Company by Judge Brown, of the United States circuit court.

—Jacksonville, Fla, has contracted for the construction of a new Dixon garbage crematory. Before the contract was let, City Engineer Harley, of Jacksonville, telegraphed to Peter Weidner, of the Dayton, O., board of city affairs, asking if the new Dixon plant at that place had met expectations. Mr. Weidner replied as follows: "As per contract, thirty days' trial was given Dixon crematory to ascertain whether gases or odors arise during cremation. After thorough test, was accepted as satisfactory; incinerates perfectly in all details. Equals expectations."

—The La Capital Company, of Buenos Ayres, Argentine Republic, South America, have let contracts for the materials for a power station and the necessary equipment for the power in the station, and the road-bed and cars, to parties in the United States. The Berlin Iron Bridge Co., of East Berlin, Conn., have the contract for furnishing the skeleton steelwork of the building and the roofs. The roof over the engine and dynamo room will be covered with corrugated iron, lined with the Berlin Company's fire-proof anti-condensation roof lining. Taking into consideration the magnitude of the work and the distance it is to be shipped, it is to be considered a good recommend for the Berlin Company's roofing.

—Since the history of the world began people have racked their brains over legerdemain and puzzles of all descriptions, and things have not changed in this respect, for the person is yet to be found who does not enjoy studying out a really clever puzzle. Most good puzzles cost money; some of them a lot of it, but the Clayton & Lambert Mfg. Co., of Ypsilanti, Mich., are sending out one gratis, to all who ask, that is a "poser" to the uninitiated. This puzzle was accidentally discovered in their manufacturing establishment. Two of the hose bands used in the Ypsilanti hose repair outfit being found one day interlocked in a manner that would rack the brain of a Baltimore lawyer to undo them. This queer and self-planned puzzle has been studied out and will be sent to any address, with directions of operation, upon receipt of a two cent stamp.

—Charlestown, W. Va., has contracted with Gleason & Bailey Mfg. Co. for a trussed ladder truck.

—Passaic, N. J., has contracted with Gleason & Bailey Mfg. Co. for a hook and ladder truck with trussed ladders.

—The National Water-Tube Boiler Co., of New Brunswick, N. J., will supply the new boilers to be used for the improvement of the Baltimore water-works.

—Henry R. Worthington, of Brooklyn, has been awarded the contract for furnishing two new pumps of 17½-million gallons capacity each for the Baltimore water-works.

—The Buffalo fire commissioners have just purchased 5,000 feet of Eureka hose from the Eureka Fire Hose Co., of New York; 500 feet of the Bay State brand from the Boston Woven Hose and Rubber Co., of Boston, and 500 feet of the Mastiff Jacket brand from the Revere Rubber Co., of Buffalo.

—Mr. Lester E. Wood, formerly sales agent in New York City for the Anniston Pipe and Foundry Co., of Anniston, Ala., has severed his connection with that concern, which will be hereafter represented in the eastern market by Mr. H. W. Coleman, at Philadelphia, with offices in the Drexel Building.

—Contracts for the construction of an Odd Fellows' Building at Attleboro, Mass., have been let by the architect, Albert H. Humes, of Pawtucket, R. I. The building will be five stories high and about seventy feet square. The interior construction supporting the floors will be steel girders resting on steel columns. The contract for furnishing and erecting the steel work has been let to The Berlin Iron Bridge Co., of East Berlin, Conn.

—The revival of business activity is testified to in encouraging terms by the Central Manufacturing Co., of Chattanooga, Tenn., manufacturers of yellow pine crossarms, oak and locust insulator pins and brackets. This company report that business is better with them now than it has ever been and that they have recently booked some very nice orders. They are receiving daily inquiries from foreign countries for their goods. With all this rush of business the immense facilities of the company enable them to give prompt attention to all orders.

—The Mineralized Rubber Co., of New York, endeavors to maintain a representative in every city, town and village having a water-works. There are nearly 4,000 of these places, and in many cases the superintendent or some other employé or city official acts as the company's representative. We are informed by the treasurer of the company that they have no agents more efficient or honest than those of this class, not a single case of defalcation having occurred during the long term of years that the company has been pursuing this policy.

—Samuel Eastman & Co., of East Concord, N. H., have recently received a unique and exceptionally strong testimonal for their new nozzle system. The Fire Underwriters' Association were about to advance rates at St. Catherines, Ont., when the Eastman nozzle was brought to their attention as a means for increasing the efficiency of the water service. A public test of this new system showed an improvement of about 100 per cent. in stream, both as to volume and distance, over the old system. Consequently the city council adopted the Eastman system for the fire department, the underwriters ceased to threaten increased insurance rates and the people will most likely be given lower rates than ever.

—The largest contract for water-works pumping machinery ever placed in this country has recently been made by the city of Chicago. It amounts to $437,600, and covers six vertical triple-expansion direct-acting high-duty pumping engines, and has been awarded to Henry R. Worthington, of Brooklyn, N. Y. These engines have a daily pumping capacity of 20,000,000 gallons against a head of 150 feet, and will be supplied with steam at a pressure of 140 pounds to the square inch. The engines will each be of 530 horse-power. Mr. Worthington is also building three similar engines for the city of Brooklyn under a contract amounting to $385,000. These engines each have a daily capacity of 20,000,000 gallons, to be delivered against a head of 168 feet, and the steam will be supplied at a pressure of 135 pounds to the square inch, each engine being of 600 horse-power.

—With water-works officials and with the plumbing trade the Mueller tapping machine is a favorite. The manufacturer states that over 2,000 machines of its make are used in the United States alone. The city of Chicago adopted the Mueller machine many years ago, and at the present time has eight or ten machines in use in the different departments. The machine is not built to make it as light as possible, but it is solid and strong in every part, and guaranteed to do more work with less repairs than any other machine manufactured. There is no water lost in making a tap, no matter how heavy the pressure may be, and the ease of operating under high and low pressure is the same. The H. M. Corporation cocks need no introduction to the users of the Mueller machine and to hundreds of others who can attest to the high quality of these goods. The machines and cocks are made by the H. Mueller Manufacturing Co., Decatur, Ill.

DETROIT WATER-WORKS REPORT.

L. N. Case, superintendent of the Detroit, Mich., water-works, has submitted his annual report, which shows that the total receipts from all sources were $537,786.11, and the total expenditures $545,147.10, including the redemption of $50,000 of bonds. The expenditures for construction, less the receipts therefor, amount to $262,010.73, of which fully $125,000 was for extraordinary construction, practically for the enlargement of the works, such as the completion of the new 42-inch main and the building of four new boilers.

The report shows how water rates have been reduced during the last ten years from $5, $6 and $7 per family to $4, and meter rates in proportion.

"For the last eight years," says the report, "there has been a unanimity of sentiment among the different members of the board upon the subject of the 'economy of waste,' and to that end it has devoted to the purchase, placing and care of meters a sum averaging each year about $20,000.

"The total amount expended during the eight years is $151,834.33. Deducting a fair estimate of the present value of the meters, which is $100,555.04, we have as actually expended $51,279.19 for the eight years, or an average of $6,409.91 annually.

"During these years the income of the board has not been increased by an advance of the rates or in any other way to meet this expenditure, or for any other purpose. On the contrary, the rates have been from time to time reduced until the receipts for water as regulated by the present rates aggregate an annual reduction of $128,740."

THE ARCHIBALD WHEEL.

That fire engines, trucks and wagons should be fitted with strong and durable wheels is very generally conceded by fire department officials throughout the country. The breaking down of an engine or truck while going to a fire

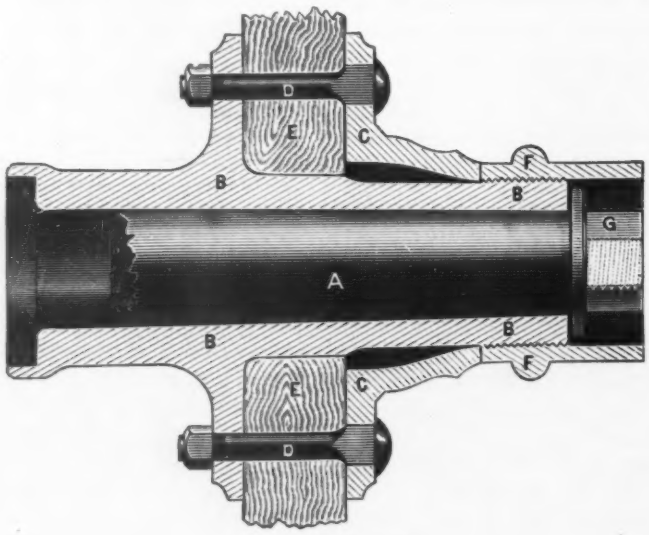


FIG. 1. 85

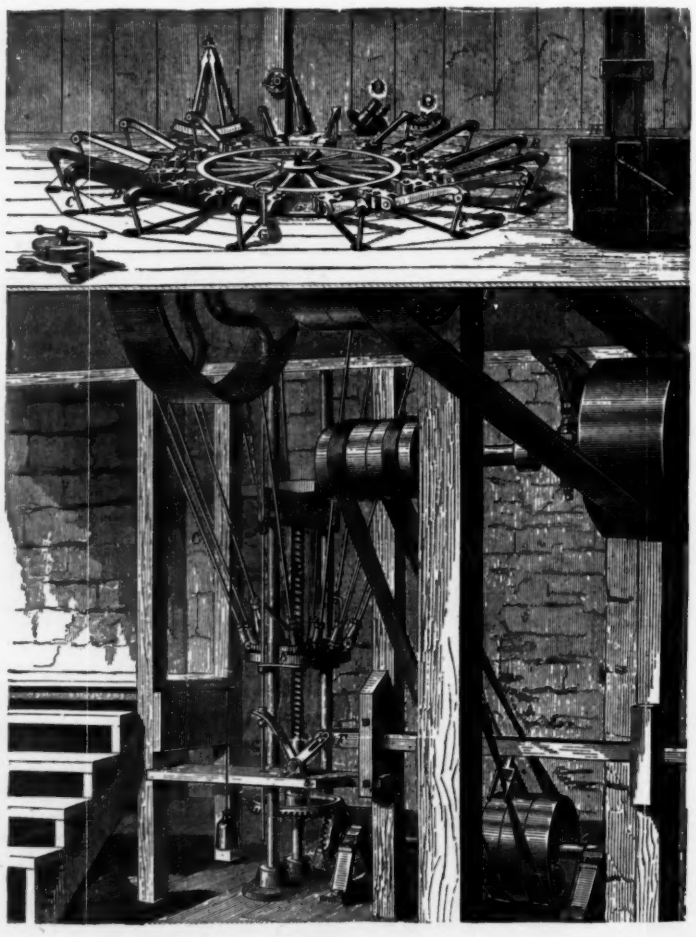
could easily result in not only a great loss of property, but also in the sacrifice of human life. Hence the importance of having all fire apparatus supplied with wheels that can be depended upon. Such wheels are made by the Archibald Wheel Company, of Lawrence, Mass., and they are now recognized all over the world as the standard. The superior merit of the Archibald wheel is so well known that the wheels are largely used on every continent, despite the heavy duties imposed by some of the foreign governments. A detailed description of this famous wheel and the method of its manufacture will be of interest to our readers.

FIG. 2. 86

Fig. 1 represents a lateral section of the hub, exposing the axle, bolts and the method of construction. A is the axle; B the back of the hub, which is also the axle-box; C, the front or loose flange; DD, the bolts through spokes and flanges; EE, the spokes; F, the front hub-band over the axle nut; G, the axle-nut.

Fig. 2 shows the construction at the centre and rim, and clearly exhibits the joints and the position of bolts. The size of the spokes in these wheels is, as a rule, the same as the diameter of the axle. In case of accident, the wheel may be readily repaired, its construction being so simple. Duplicate spokes, hubs or boxes and axles should, if practicable, be kept on hand for the purposes of repair.

The large cut following shows the machine with which this wheel is manufactured, and a reference to same will assist in a perfect understanding of the structure and endurance of the wheel. The machine acts to force into close contact the flat surfaces of the spokes at their inner ends, and thus compact them, so that their faces form true circular planes, upon which the inner faces of the hub flanges rest. It will be seen from the cut there printed, representing the machine, that it occupies two consecutive floors. A strong circular plate of cast-iron, about seven feet in diameter, having its upper surface faced off true, is placed horizontally level with the floor of the shop. Arranged at equal distances around its outer edge are a number of levers, B, equal to the num-



MACHINE FOR MAKING WHEEL. 87

ber of spokes to be set in the wheel—sixteen in this case—having their fulcrums securely bolted to the plate. The long arms of the lever radiate from the plate about three feet all around; the short arms are formed into cams or rolling inclines, acting upon sliding pins of cast-iron, which move freely in a radial direction, in guides formed in the fulcrum-blocks. When the long arms of the levers are raised, the sliding pins are pressed outward by a spring, until they bear upon the cam-shaped short arms of the levers at the point nearest the fulcrum or centre of motion of the lever. When the long arms of the levers are lowered, their sliding-pins are forced inward by the cams, and unite in pressing inward the wheel properly placed in their embrace. The levers are all actuated with rapidity, uniformity and certainty, by means of wrought-iron rods, C, extending downward from the ends of the levers, converging to a vertical column, D, under the centre of the plate, much as the braces of an umbrella

extend downward from the ribs to the stick. A screw is cut upon the central column, D; and a nut, E, answering to the slide upon an umbrella-stick, raises or lowers all the levers at once with great facility and with any required power. Motion is given to the nut by means of bevelled gears, and open and cross belts with fast and loose pulleys, so arranged that, at the upward and downward limits, the belts are thrown automatically upon the loose pulley and the motion of the nut and levers stopped. Any required motion, either up or down within the range of the screw, can be obtained with great delicacy and convenience by a shipper, F, actuated by a shipping-rod, G. The felloes and spokes, having been perfectly shaped and completely finished by machinery, are first put together by driving the spokes into the felloe or rim, one at a time; the felloe being held firmly by a vise, H, specially constructed to prevent splitting of the felloe or twisting of the spoke, so that an exact fit is obtained at this important point. The felloes with their spokes are then placed in the press, when the perfection of the fitting is shown by the perfect joint made by the spokes when they meet in the circle, to be curved and embraced by the hub, and by the coincidence of the half-holes in the contiguous sides of the spokes, A, which together form the holes for the eight bolts that are finally to hold the hub-plates together. Temporary hub-plates, I—one above and one below—with a powerful screw in their centre, hold the ends of all the spokes truly in the plane of the circular plate while undergoing the pressure of the levers. The extent of this pressure is ascertained by marking carefully with a sharp pencil around the circumference of the upper temporary hub-plate after the spokes have been brought to a close, firm joint; and then the pressure is put on till the joints of the felloes close up firmly. Another similar mark being made, upon removal of the temporary hub-plate, it is found that a space of a quarter of an inch is made between the pencil marks—a reduction in diameter of half an inch. Now as the difference in circumference corresponding to a difference in diameter of an inch is 1.5708 inches, this divided by 16 (the number of spokes) gives .098 of an inch, *or substantially one-tenth of an inch, as the lateral compression of each spoke.* This is by no means the limit, but is regarded sufficient to secure the spokes against being loosened by shrinkage in any climate, and this pressure is what gives this wheel its enormous strength and durability. The hub, OO, is firmly bolted together while the wheel is in the press, and holds the spokes securely, the bolts fitting snugly in both spoke and hub. The felloes spring apart a little when taken from the press, but only a little; and the tire easily makes that all right again.

So great is the facility with which this machine is operated, that one man with an assistant easily puts together a set per hour, including the time of adjusting machinery for the difference in diameter of the wheels.

The great point in this wheel, made in this manner, is the thorough compactness of the hub-ends of the spokes, though the other ends of the spokes and the joints in the felloes receive scarcely less benefit. By observing an old wheel it will be seen that the spokes are bedded into the felloes and hub. This is done by degrees, and is unavoidable in wheels made in the usual way. The only way to keep such a wheel together is to reset the tire, so as to take up the looseness caused by the slow crushing and grinding process. This is all prevented in the Archibald process of manufacture, by putting on a pressure at every joint of more than ten times the amount the wheel will ever be called upon to sustain in actual use, and at a time when the wheel is so held as to receive this pressure without possible injury to it. One-tenth of this pressure from a tire would ruin the wheel, but the tire when properly put on will hold all this pressure and remain on tight until worn out. The hub holds all the pressure of the spokes within it independently of the tire. Wheels made by this method are perfectly round and true. The pressure distributed about the rim can be varied from zero to one hundred tons, if required. There are reasons why iron-hubbed wheels made in this manner should be far superior to wheels with wooden hubs. The spokes cannot crush into the hub, as they will do into wooden hubs whether driven full size into a very large hub, as was the practice fifty years since, or, as at present, into a smaller hub, the spokes having tenons and shoulders. With wooden hubs the spokes are weakened just where they need the greatest strength; while in the iron-hubbed wheel the spokes are twice as large at the hub as in a wooden-hub wheel of corresponding size. A wheel made on this plan will not shrink, and as the bases of the spokes are as firmly compressed against each other as it is possible for wood to be, and held by metallic flanges firmly bolted together, it is apparent that such a wheel possesses the advantages of the most perfect method of construction yet devised. The Archibald wheels are also largely used on the better class of team wagons, trucks and carts of every description. The extra first cost of the wheel is offset by the long service they will give, and the repair charges are reduced to a minimum. This wheel certainly merits the substantial endorsement it received from hundreds of fire department officials who have tested it in the service.

ST. PAUL'S FIRE WARDEN ORDINANCE.

The three principal sections of the fire warden ordinance of St. Paul, the enforcement of which has served to minimize disastrous conflagrations in that city, are as follows:

Section 1. In addition to the duties now imposed by an ordinance upon the chief engineer of the fire department, he shall be and is declared to be the chief fire warden of the city of St. Paul, and shall keep a record and report to the common council, on the first Tuesday in June and December, in each year, all information necessary to protect the city from danger by fire.

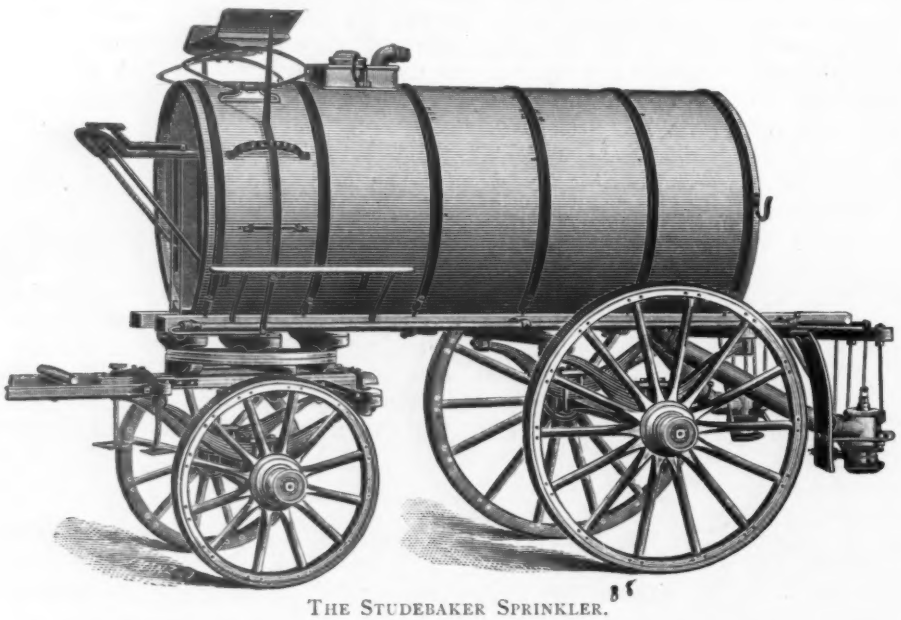
Section 2. The chief fire warden, in the months of May and November, and as much oftener as may be deemed proper, between sunrise and sunset of any week day, is authorized to enter into any house or building, lot, yard or premises in said city, and examine the fire places, hearths, chimneys, stoves and pipes thereto, ovens, boilers, or other apparatus likely to cause fire; also the places where ashes may be deposited; and all places where any gunpowder, hemp, flax, tow, hay, straw, rushes, shavings, or other combustible materials may be lodged; and give such orders, either as to the removal and alteration, or better care and management thereof, which directions shall be obeyed and complied with by the person or persons directed in that behalf, and at their expense.

Section 4. If any person or persons shall neglect or refuse to comply with any such directions as the chief fire warden may give in the premises, or shall obstruct or hinder the chief fire warden in the performance of his duty, the person so offending shall forfeit and pay for every such neglect, non-compliance or hindrance, a sum not exceeding $50 for every day which shall elapse after the time allotted for such removal, alteration, or better care or management, without compliance with such directions; the said person shall also forfeit and pay a further and additional sum of five dollars and all expenses caused in carrying into effect the directions of the chief fire warden.

—Bernville, Pa., has contracted for a Muskegon chemical fire engine through the Gleason & Bailey Mfg. Co.

THE STUDEBAKER SPRINKLER.

The Studebaker patent improved sprinkler, in use in hundreds of cities throughout the country, is illustrated on this page. The Studebaker sprinkler tanks are made of cypress or white pine, circular in shape, with a two-feet, two-inch flat surface on the bottom. The tanks are constructed on scientific principles; the staves are four inches wide; the edges are dipped in boiled oil and put together with dowels; the oil making them impervious to water, obviates shrinking and swelling, and the dowels hold them firmly in place. The tank and frame are built together, the frame supporting the bottom of the tank; the hoops extending around the tank have lugs riveted on the end; through the lug and through the frame a substantial bolt passes with a nut on the end of the bolt, so that the hoops can be readily adjusted. The Studebaker gears and wheels are too well known throughout the United States to call for detailed description here.



THE STUDEBAKER SPRINKLER. 88

The small cut shows the Niagara valve sprinkling head used on the Studebaker sprinklers. The following are the essential points of this device:

First.—A simple flanged saucer of brass (32), attached by screws (36) underneath the sprinkler head.

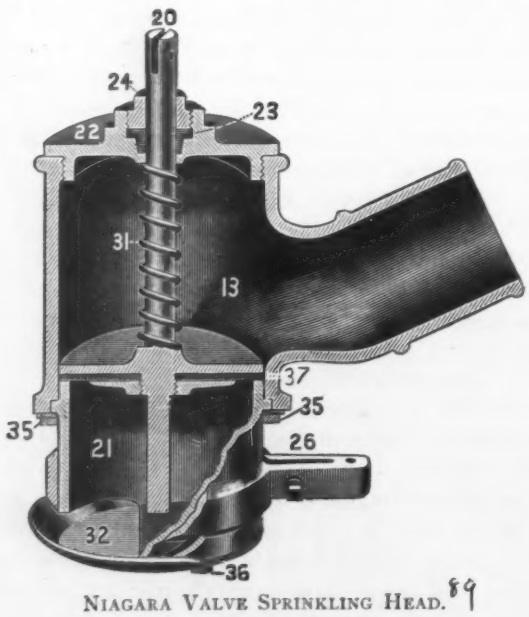
Second.—A cylinder-shaped valve head of brass (21), attached by screws (35) to valve box (13), having an open, unobstructed slot outlet for the water.

Third.—A leather-packed (937) brass plunger valve (20) with spiral tension spring (31).

Fourth.—A cast iron valve box, or "T," (13) attached to conducting hose leading from tank.

Fifth.—An adjustable band of brass (26) for graduation of spray.

Sixth.—A brass cap (22) with rubber-packed (23) stuffing box (24), closing top of valve box.



NIAGARA VALVE SPRINKLING HEAD. 89

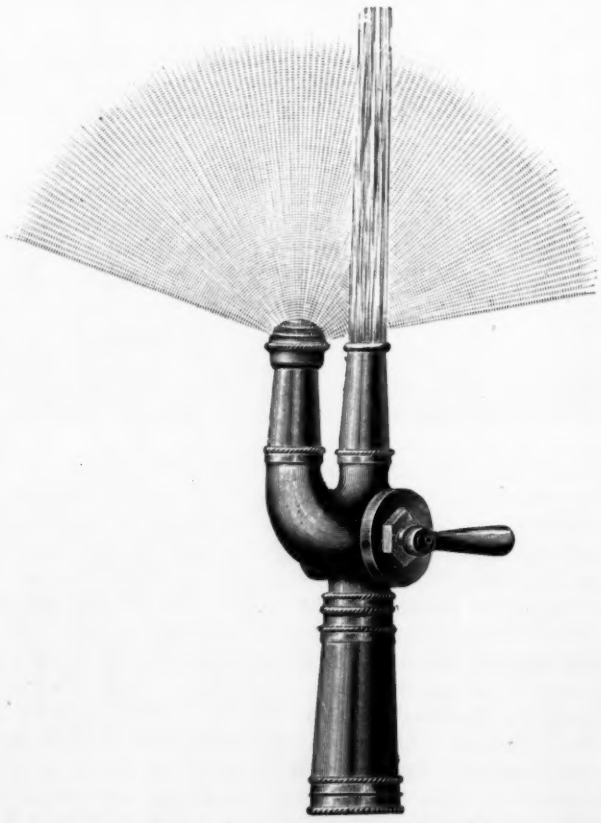
It will be noticed that when valve stem No. 20, shown in cut, is raised, an unobstructed passage-way is opened for the discharge of the water through the open slot to the saucer flange, from which the water is distributed in any desired volume and with an evenness of spray that can only be equalled by a shower of rain.

A MUNICIPAL TRAMP HOUSE.

The town of Wavery, Ill., maintains a "tramp house." It is a place where all tramps are placed when found in the city limits, given adequate shelter from the wind, bread of a good quality and all the city water they want without pecuniary charges therefor. But they are expected to work out their entertainment.

THE COMMON SENSE NOZZLE.

Fire department officials who are not already familiar with the Common Sense nozzle manufactured by C. N. Richardson, of Providence, R. I., will be interested in the accompanying illustration. The following noteworthy points are claimed for this nozzle: First, single stream; second, single stream and spray together; third, heavy spray alone; fourth, double stream, one from each barrel; fifth, one-half spray and one-half solid stream; sixth, complete and easy shut off.



THE COMMON SENSE NOZZLE. 90

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"This book is to be strongly commended as a very effective presentation of the case for municipal reform."—*Philadelphia American.*

"The book deals with municipal reform in the United States and is an exceedingly clever work on this subject. In his preface the writer argues, 'that good government in this country must come from the people, and they must know what measures are desirable and what theories are visionary and impractical.' This is good common sense and every American citizen should study and read this book. Mr. Devlin says, 'the science of municipal government in this country is crude,' and he gives a good reason for saying so and explains in a clear manner why such is the case. All in all, it is a most valuable and handy little volume and it is surprising to note what excellent sense and arguments on the country's good, originated in the mind of this young man."—*Portland* (Ore.) *Chronicle.*

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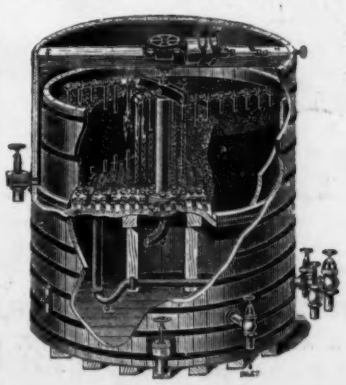

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A FEW COMPLIMENTARY LETTERS.

Salt Lake City, Utah, Feb. 18, 1897.

City Government Publishing Co.,
New York, N. Y.

GENTLEMEN:—I beg to hand you a draft for $3.00 in payment of my subscription for CITY GOVERNMENT. I find every number of your magazine filled with valuable information and good suggestions to those interested in municipal affairs. CITY GOVERNMENT will do more to solve the intricate questions presented to municipalities than any other agency that has ever been offered. No city official, of whatever degree, can afford to keep his name off your subscription list.

Very truly yours,
JOSEPH E. CAINE,
Member Board of Public Works.

CITY OF BOSTON.

OFFICE OF THE MAYOR, Feb. 13, 1897.

City Government Publishing Co.,
New York City.

GENTLEMEN:—The establishment of such a publication as CITY GOVERNMENT is an encouraging indication of the growth of interest in municipal affairs. The discussion in your columns of subjects of general interest to all municipalities cannot fail to yield valuable results. In spite of the great variety of local conditions, there are many problems in which all large cities have a common interest, and it is most desirable that those who hold important municipal offices should keep in touch with the new developments which are constantly taking place in other cities. I am glad to notice that you pay especial attention to the technical branches of municipal work.

Wishing your publication every success, I am,
Yours very truly,
JOSIAH QUINCY, Mayor.

Pittsburgh, Pa., Feb. 20, 1897.

City Government Publishing Co.,
New York City.

GENTLEMEN:—I take pleasure in sending you check for $3.00 for subscription to CITY GOVERNMENT. Your publication has certainly a great field of usefulness, and will prove a valuable aid to all public officials. I will be pleased to do anything I can to advance the interests of CITY GOVERNMENT. Very truly yours,
MORRIS W. MEAD,
Chief Electrical Bureau Department Public Safety.

New York, Feb. 19, 1897.

City Government Publishing Co.,
New York, N. Y.

GENTLEMEN:—Allow us to congratulate you upon the marked improvement you have already made in your CITY GOVERNMENT; also of the success you are making of it in a financial way, which in times like we are having at the present makes it seem remarkable.

Very truly,
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OFFICE OF THE GAMEWELL FIRE ALARM TELEGRAPH CO.
New York, Feb. 20, 1897.

City Government Publishing Co.,
New York.

GENTLEMEN:—In matter and appearance CITY GOVERNMENT for February is most excellent. The articles on "Street Railways," "Street Lighting" and "Municipal Ownership" are replete with important information, and should be interesting to almost every municipal official. I have sent marked copies to a number of prominent officials in some of the larger cities, and hope it will have the effect of drawing their attention to the value of your publication to them. Sincerely yours,
JOSEPH W. STOVER, President.

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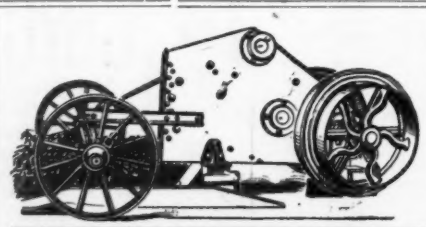

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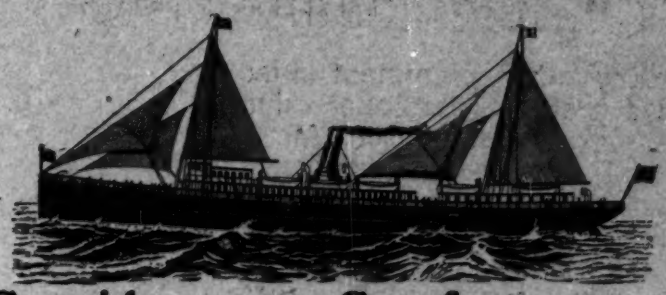

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